Fire Weather Annual Report
Southeast Idaho
2014

Pocatello Fire Weather Office
Pocatello, Idaho

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service

2014 Fire Weather Annual Report

National Weather Service – Pocatello Fire Weather Office

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National Weather Service
Weather Forecast Office Pocatello
1945 Beechcraft Ave.
Pocatello, ID 83204

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1. Introduction:

The National Weather Service, Weather Forecast Office at Pocatello, Idaho has Fire Weather Forecast responsibility for portions of Idaho serviced by the Central, Eastern and Southern Interagency Dispatch Centers (Figure 1). The Pocatello Fire Weather Office produces this Annual Fire Weather Report. Previous reports are maintained up to five years.

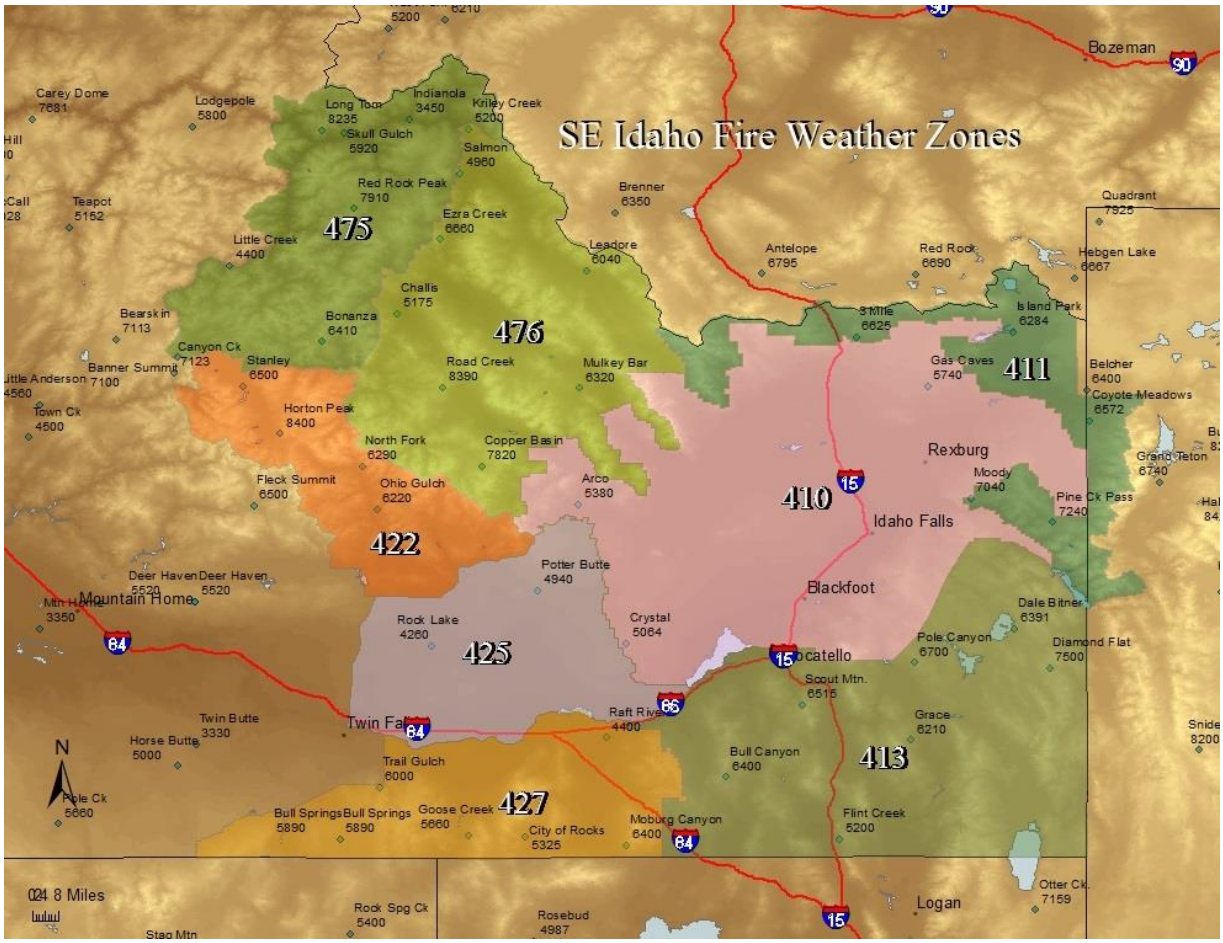

Figure 1 WFO Pocatello Fire Weather area of responsibility (solid color areas).

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2. Overview of the fire season:

The El Niño/Southern Oscillation Index (ENSO) has remained in a neutral state since the summer of 2012, this does not necessarily mean that rain fall in the Pacific Northwest will be near "Normal" over the course of a year. In a neutral year, strong upper level winds (the Jet Stream) are generally located further off shore, in the Central and Western Pacific Ocean (Figure 2.1). This often results in either a splitting flow pattern with storm systems moving to the north or south of Idaho or even a blocking condition where storm systems show less development or fail to reach this area at all. The ridge of high pressure extending along the coast from California to Alaska showed more amplification than January of 2013. This resulted in even fewer storm systems affecting southeastern Idaho during the winter months.

The El Niño/Southern Oscillation (ENSO) cycle occurs over a two to seven year period and refers to conditions of sea surface temperatures in the tropical Pacific Ocean. Researchers have identified other cyclic patterns besides ENSO around the globe that may affect long term weather patterns. Some of these cyclic patterns may span 10 or even 30 years. La Niña (colder than normal) and El Niño (warmer than normal) are terms associated with extremes in the ENSO cycle. The ENSO cycle has a strong influence on global climate patterns and is a major player in long term climate outlooks.

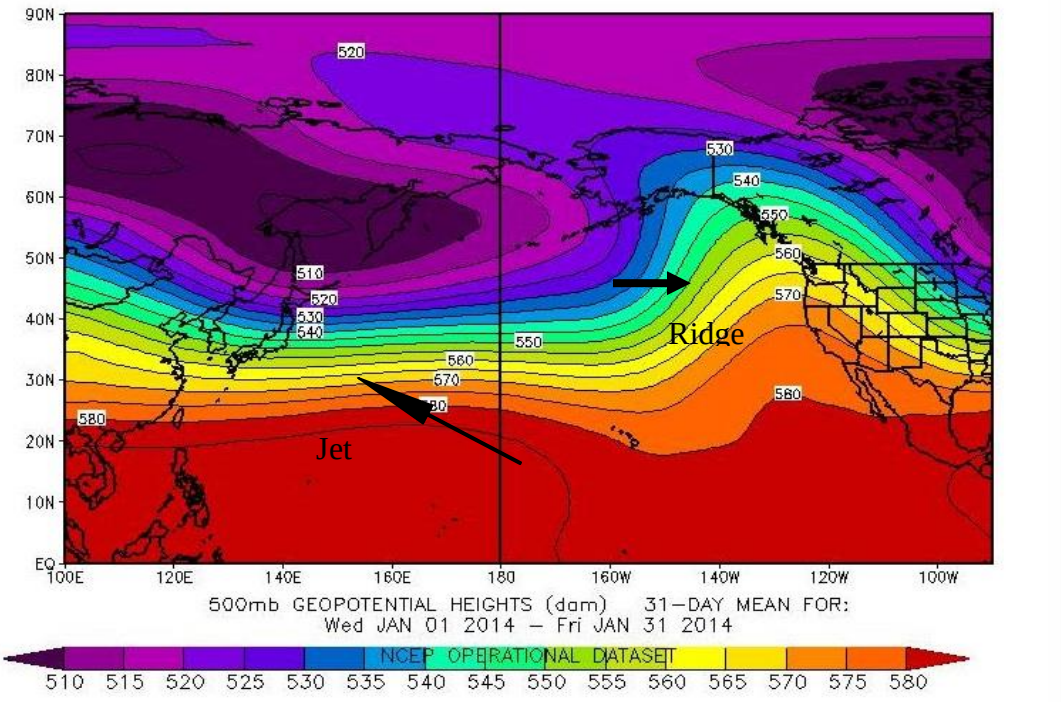


Figure 2.1 Department of Commerce, National Oceanic and Atmospheric Administration, ESRL composite reanalysis of 500 mb geopotential height pattern for January 2014. Note the strong upper level winds (jet stream winds) were displaced towards the western Pacific leaving lighter flow entering the Pacific Northwest Coast. The upper level high pressure ridge extending from California to Alaska was more amplified this year than in 2013 and helped prevent strong storm systems from entering southeast Idaho for most of the winter months.

The fall and winter weather period from October 2013 through January 2014, saw only 1 or 2 disturbances during any single month that brought precipitation to southeast Idaho. Total precipitation during this period was generally 50 to 80 percent of average (Figure 2.2a). These disturbances typically tracked along the continental divide with the headwaters of the Henry's Fork and Snake River above Palisades being the only areas in southeastern Idaho with near normal snow packs (Figure 2.2b). Just when it looked like any chance of respectable snow packs was looking rather dismal, the weather pattern shifted in a big way.

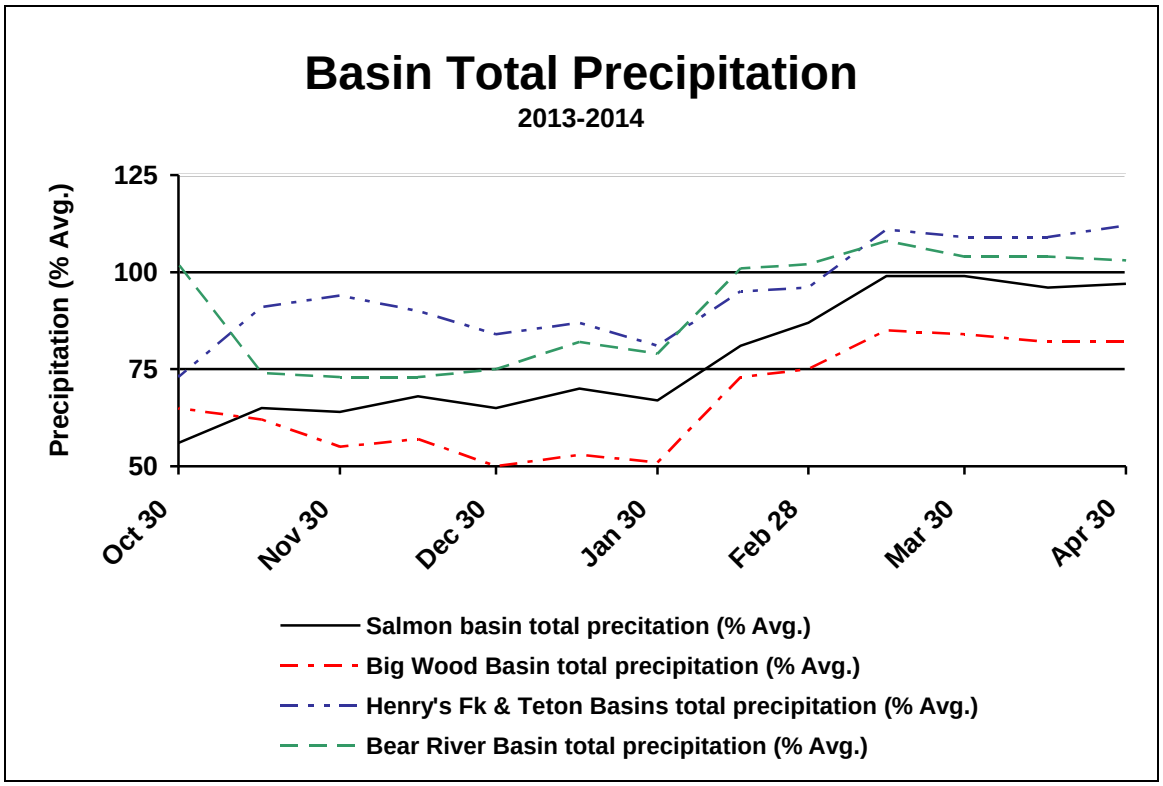


Figure 2.2a Total precipitation for select Southeast Idaho Basins expressed as a percent of average. Data source is from the USDA Natural Resources Conservation Service, National Water and Climate Center, Portland Oregon.

Westerly winds off the Pacific managed to break through under the high pressure ridge near the coast and bring significant amounts of moisture to southeast Idaho. Nearly twice the normal precipitation fell during the month of February, and this trend continued through the end of March. By April 1st, the snow packs had doubled in nearly every part of southeast Idaho (Figure 2.2c and 2.3). Temperatures were modified over time by the maritime influence of westerly winds, about 2 to 4 degrees Fahrenheit above normal and resulted in mostly rain below 6000 feet of elevation (Figure 2.3b). Despite the more substantial snow pack this year over 2013, the automated snow pack reporting site at Morgan Creek near Challis (Figure 2.4a) peaked and then melted off rapidly, suggesting an early fire season might lie ahead for portions of the Challis and Sawtooth National Forests. Snow melt at Franklin Basin near Montpelier (Figure 2.4b) took a couple weeks longer than 2013 to melt off, but was still about 4 weeks ahead of the average pace. The

above normal air temperatures obviously played a role this year, but as pointed out by the United States Department of Agriculture, National Resource Conservation Services in the Idaho Water Supply Outlook Report, June 1, 2014 the unfavorable northerly approach of storm systems over the winter resulted in less snow accumulation in the Big Lost Basin (Morgan Creek) area.

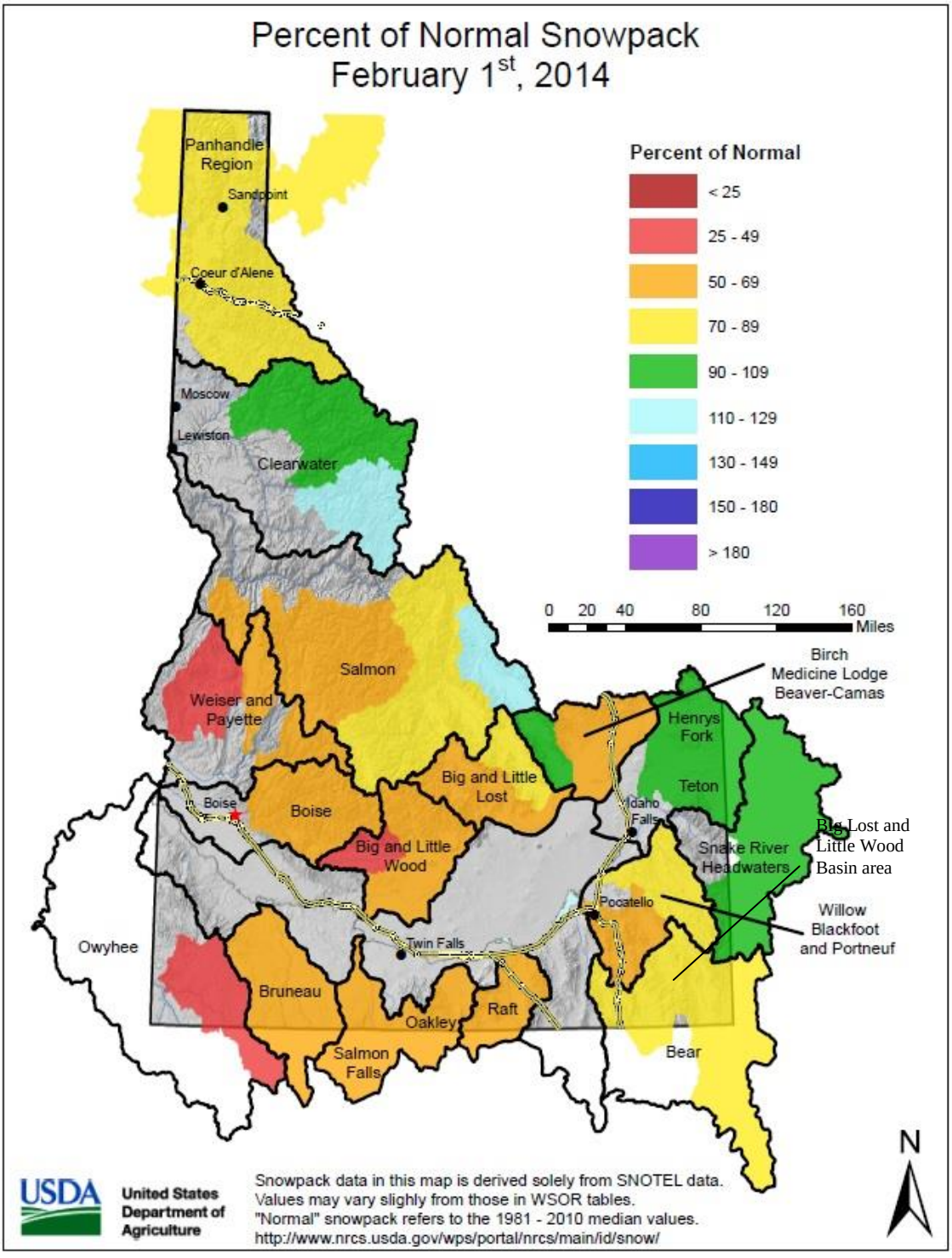
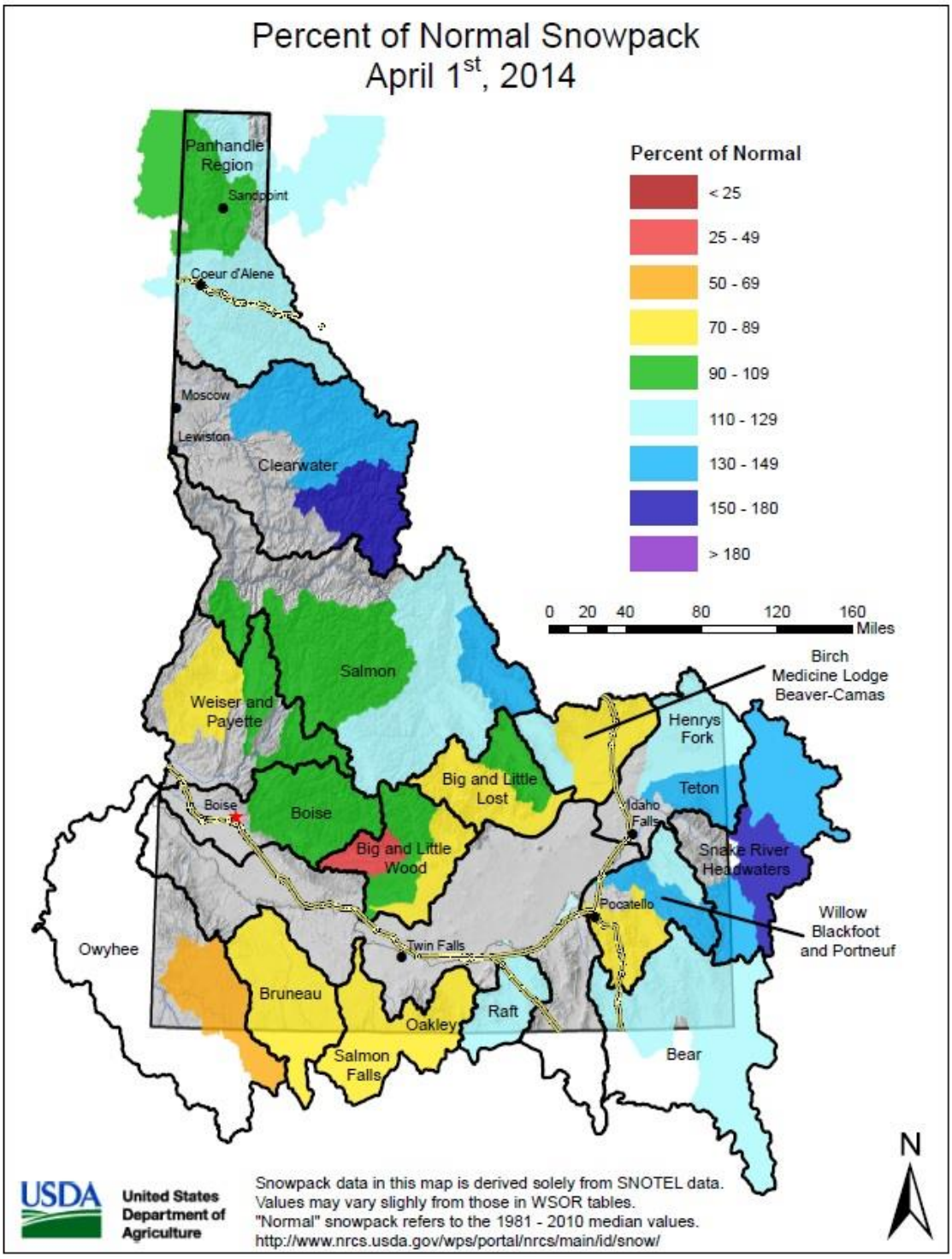


Figure 2.2b Mountain snow packs as determined from snow water equivalent. From USDA Natural Resources Conservation Service, National Water and Climate Center, Portland Oregon.



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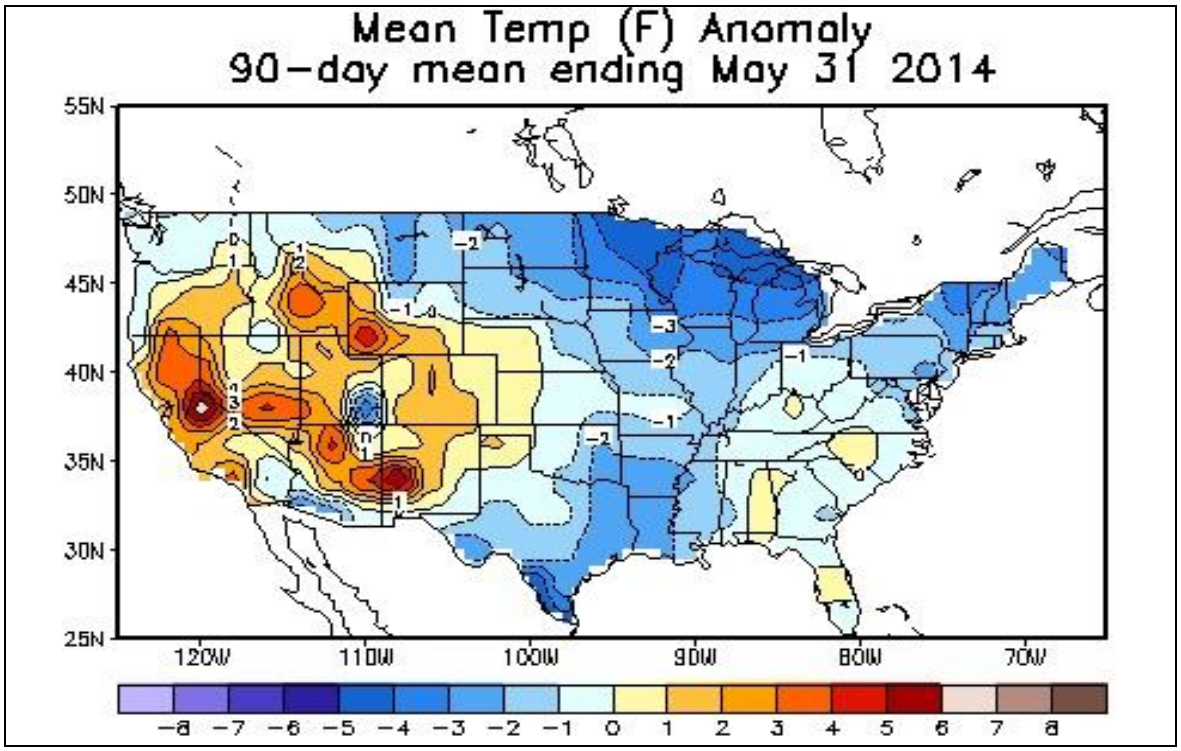

Figure 2.3 Temperature anomaly (F) for a 90 day period ending May 31, 2014, from Climate Prediction Center, National Oceanic and Atmospheric Administration.

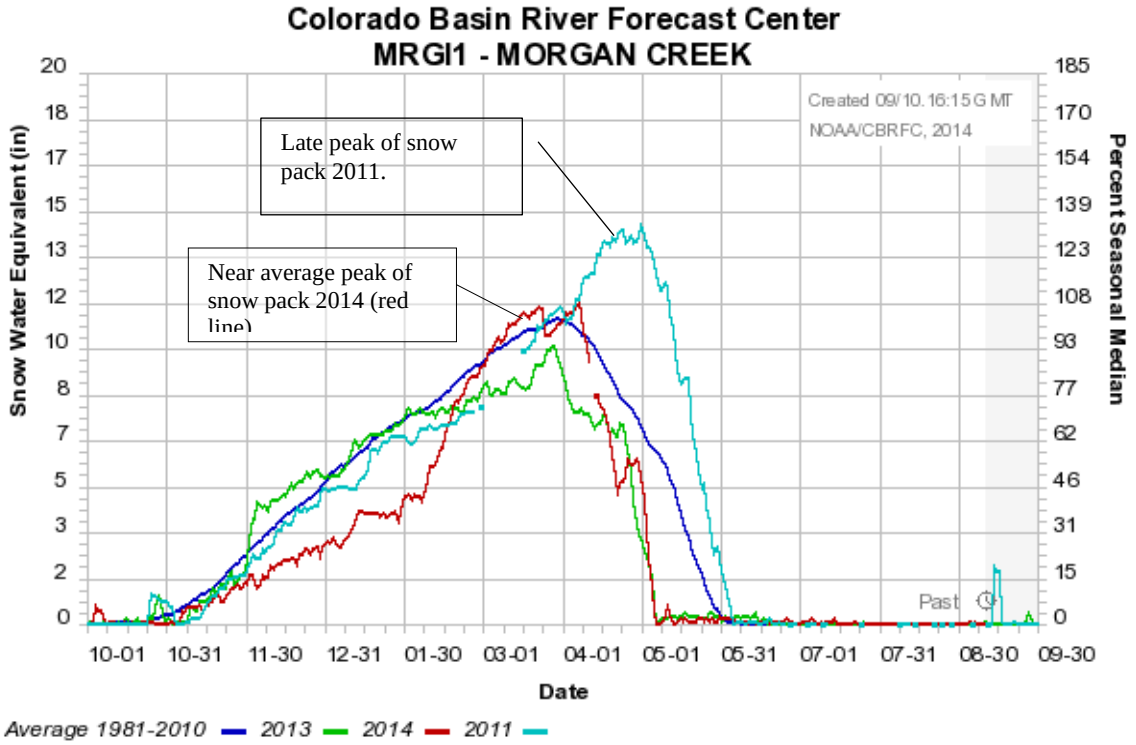

Figure 2.4a Snow packs of 2014 peaked with similar timing and volume as an average year, but like 2013, runoff ended 3 to 4 weeks earlier than average. The more substantial snow packs of 2011 are shown for reference. Source: National Weather Service, Colorado Basin River Forecast Center.

Morgan Creek is a telemetered snow reporting station of the National Resource Conservation Service, located at 7600 feet elevation on Morgan Creek Road about 24 miles north of Challis, Idaho.

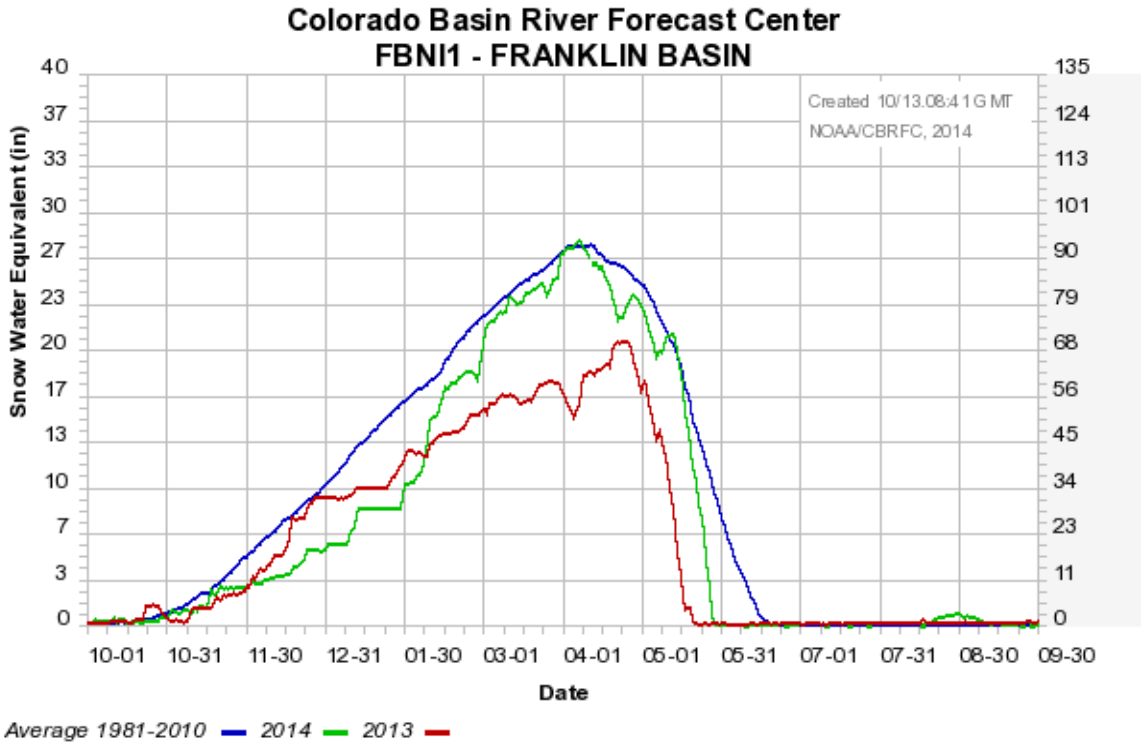

Figure 2.4b Franklin Basin SNOTEL located near Franklin Basin Road, about 24 miles southwest of Montpelier, Idaho, elevation 8170 feet.

The months of May and June saw below normal precipitation across southeast Idaho and for the most part, it seemed the fire season would eventually arrive in a few more weeks. The onset of the Southwest Monsoon brought the first surge of showers and thunderstorms to Idaho the second week of July, and another surge of moisture arrived the third week of July. This was the beginning of a very active monsoon season. The second highest monthly precipitation for the month of August was observed at the Pocatello Regional Airport where 2.18 inches of rain fell. The record is 3.98 inches set in 1968. In fact, most all of the mountain areas in southeast Idaho received rainfall amounts ranging from 2 to 5 inches above normal during the month of August (Figure 2.5b).

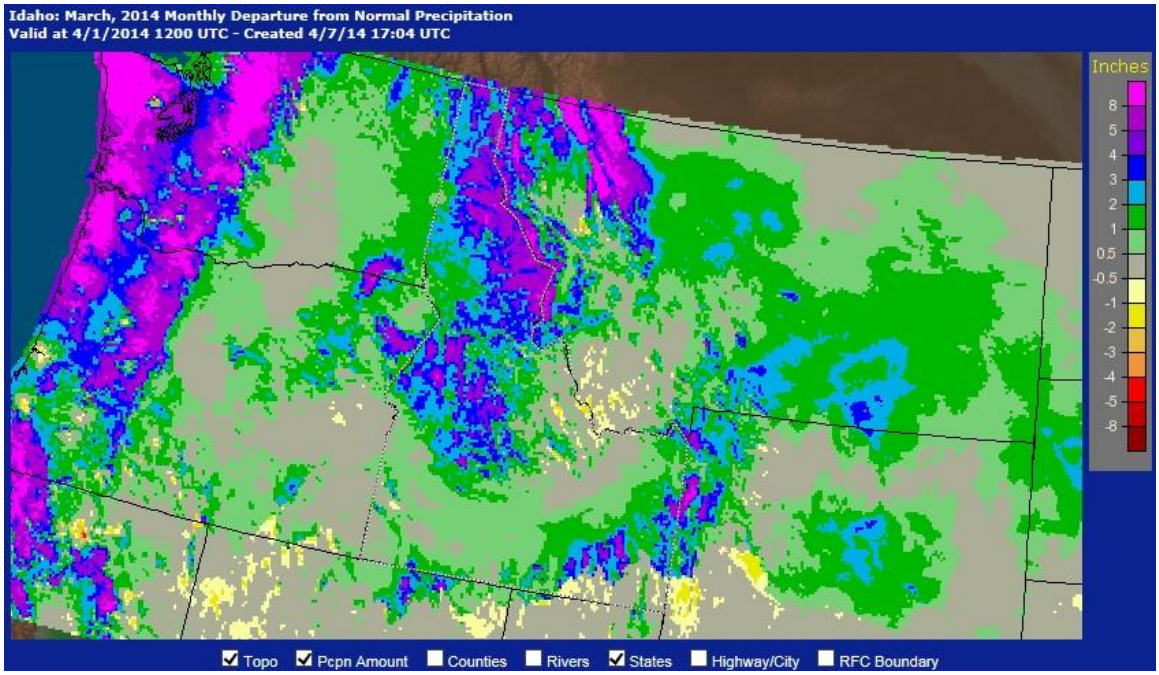

Figure 2.5a Advanced Hydrologic Prediction System (AHPS): March, 2014 Monthly Departure from Normal Precipitation, Valid at 4/1/2014 1200 UTC. Conditions of moist westerly flow off the Pacific.

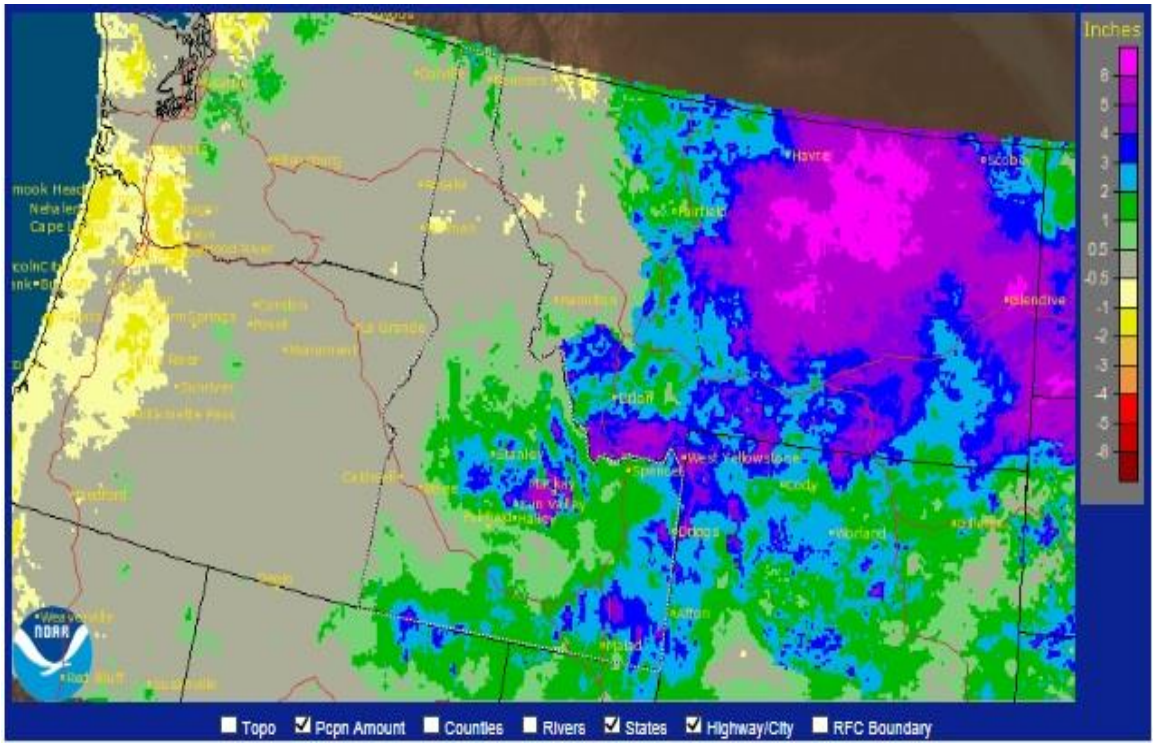

Figure 2.5b Advanced Hydrologic Prediction System (AHPS): August, 2014 Monthly Departure from Normal Precipitation, Valid at 9/1/2014 1200 UTC. Showers and thunderstorms develop under influence of the Southwest Monsoon.

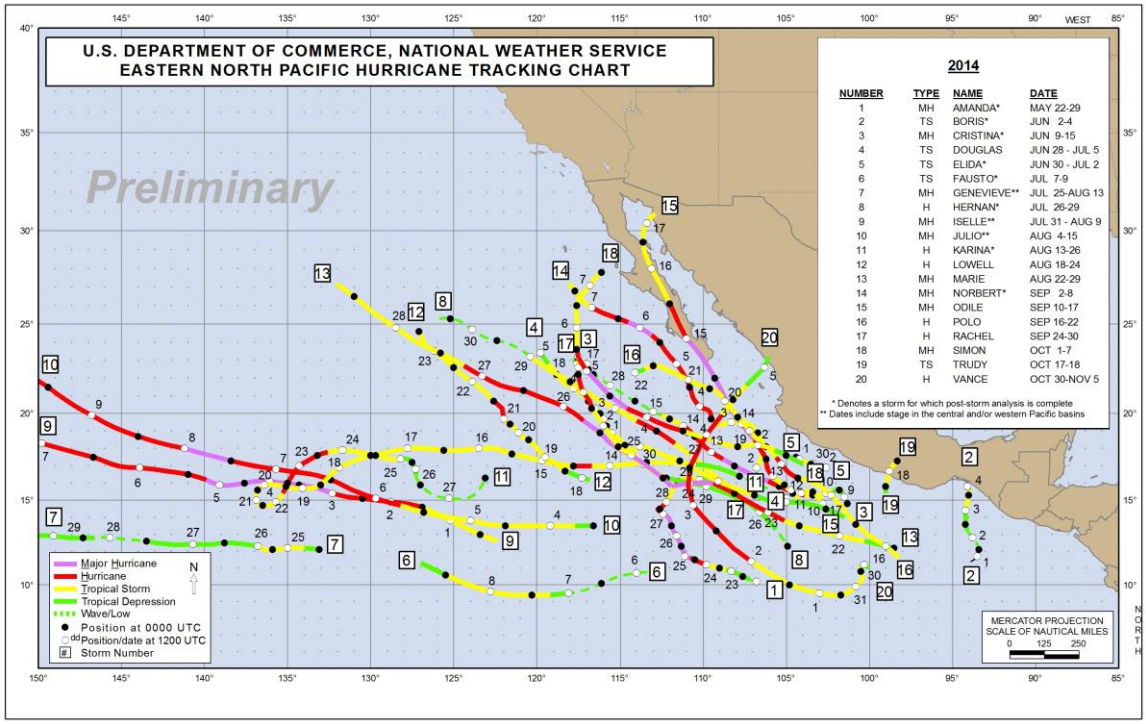

Figure 2.6 There were 20 named tropical storm systems that developed in the Eastern Pacific during the summer of 2014. Storm Type of MH denotes Major Hurricane (Category 3 or greater, Saffir-Simpson scale).

An above average tropical cyclone season occurred in the Eastern Pacific Ocean. According to the National Hurricane Center, an average year will see 15.3 named tropical cyclones with 8.5 cyclones reaching hurricane strength. As of November 5, 2014 there were 20 named tropical systems in the Eastern Pacific this season with 15 of them reaching hurricane strength, and 9 of these became major hurricanes (category 3 or greater). Several of these tropical systems were in close proximity to central and southern Mexico and even tracking northward near the coast of Baja California (Figure 2.6). Satellite imagery suggested at least some moisture from Hurricanes Hernan, Norbert, Lowell, and Marie merged with monsoon moisture over Mexico or the desert southwest, and may have contributed to the above normal rain amounts here in Idaho.

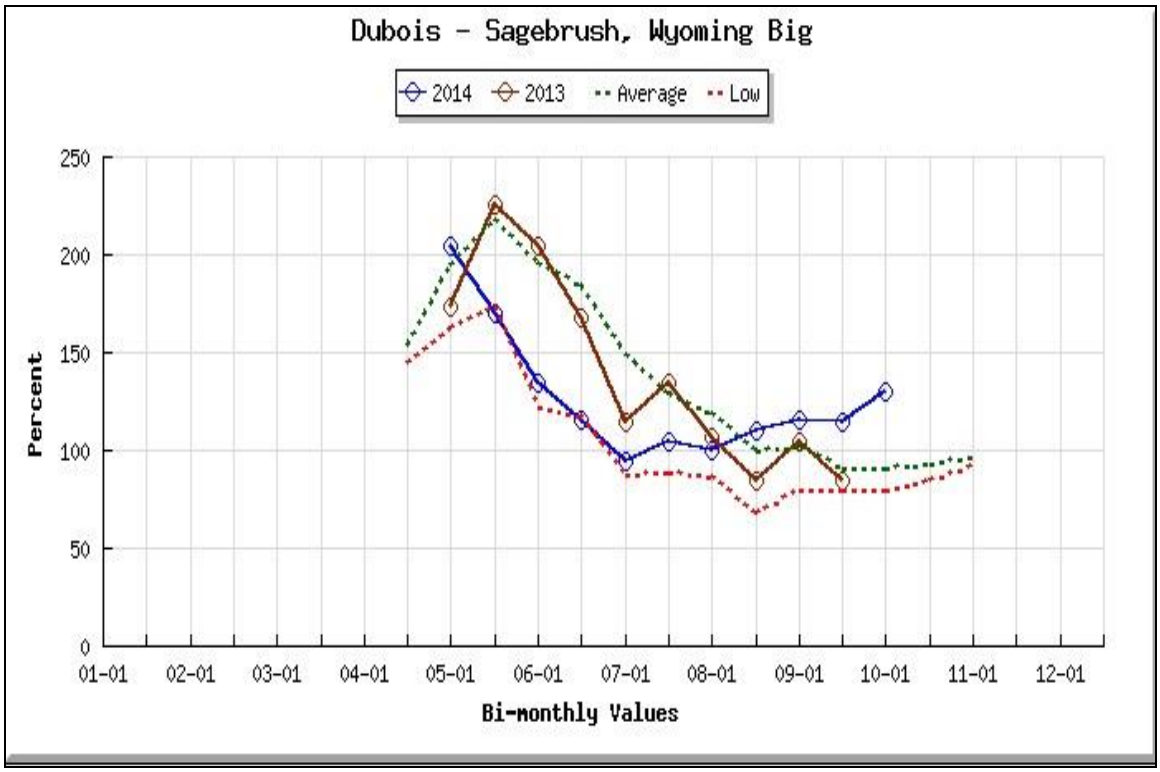

Figure 2.7 National Fuel Moisture Data Base, for Wyoming Big Sage Brush (Gas Caves RAWS station) near Dubois, Idaho.

Live fuel moisture measurements for sage brush near Dubois, Idaho (Figure 2.7) show how vegetation in the local area responded to the abundance of summertime rain fall. The observed drying trend in live fuel moisture halted in early July, and eventually recovered to 130 percent by the end of September. This resulted in a rather limited period of critical fuel conditions for this area.

Short term drought conditions as measured by the Keetch-Byram Drought Index (Figures 2.8a and b), showed soil conditions in southeast Idaho remained fairly moist with very little drying taking place over the course of the summer. Long term drought conditions persist in portions of west central Idaho and this is highlighted by the Palmer Drought Severity Index (Figure 2.9).

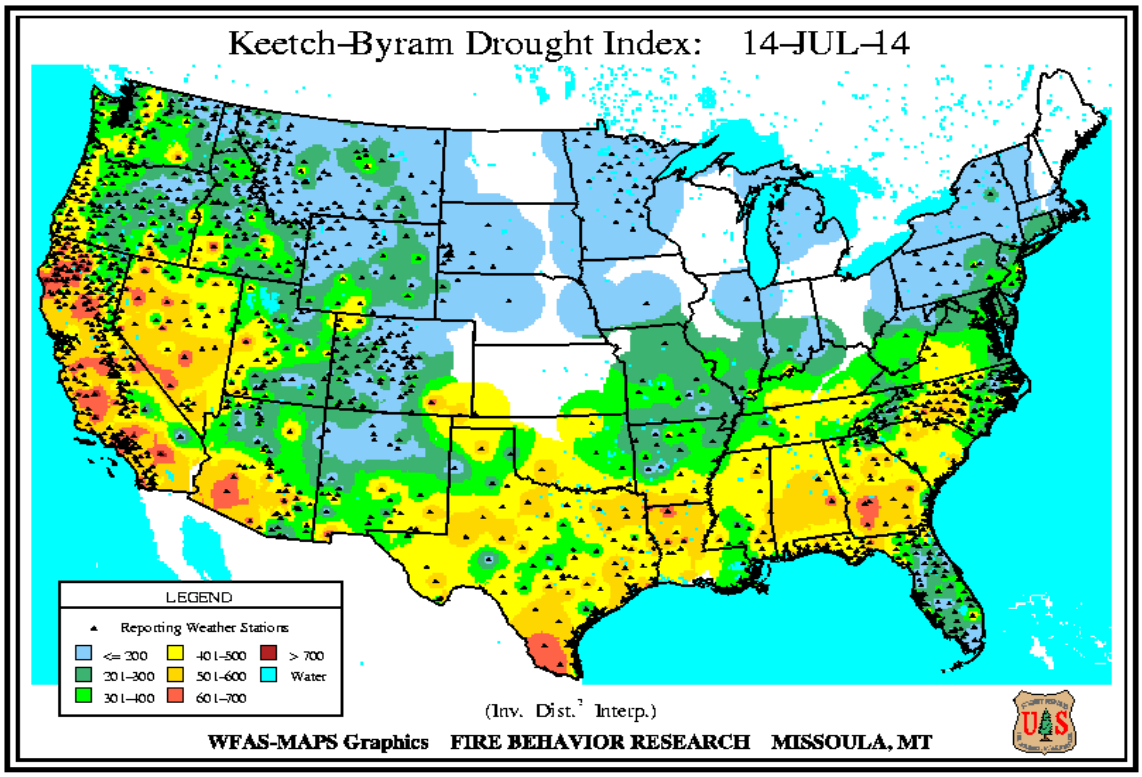

Figure 2.8(a) Keetch-Byram Drought Index reflecting more short term drought conditions, i.e. evapotransporation and near surface soil moisture. Valid July 14, 2014.

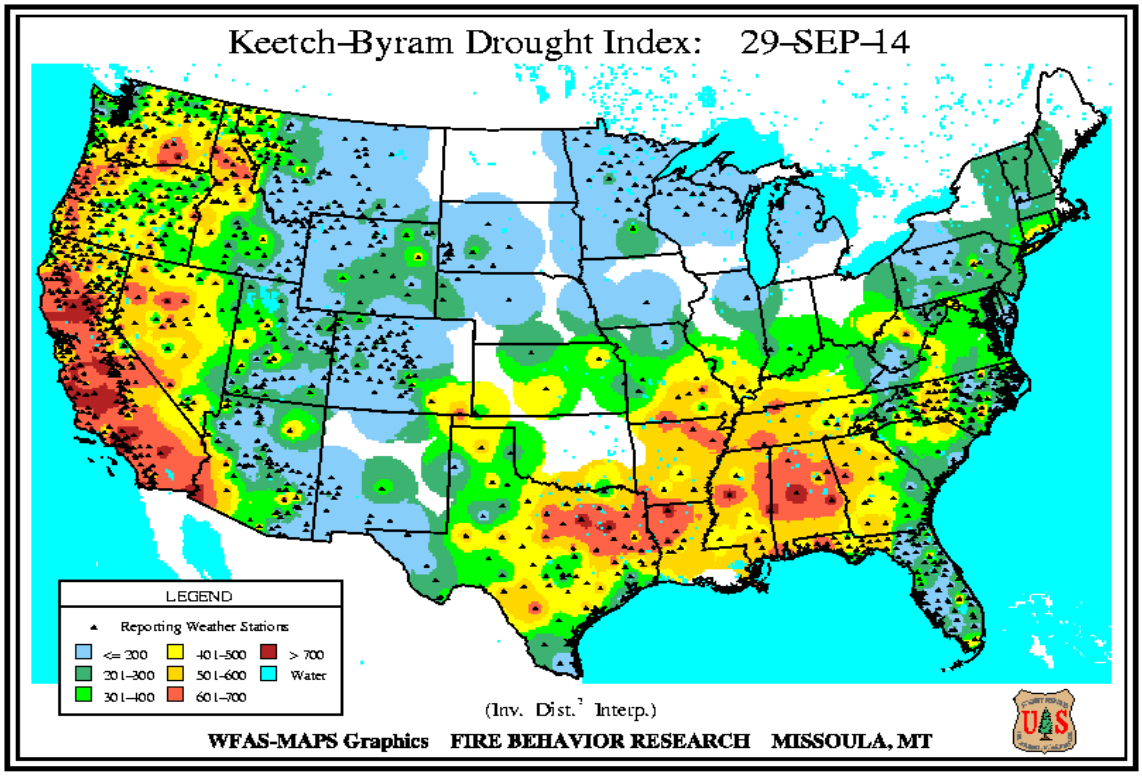

Figure 2.8(b) Keetch-Byram Drought Index reflecting more short term drought conditions, i.e. evapotransporation and near surface soil moisture. Valid September 29, 2014.

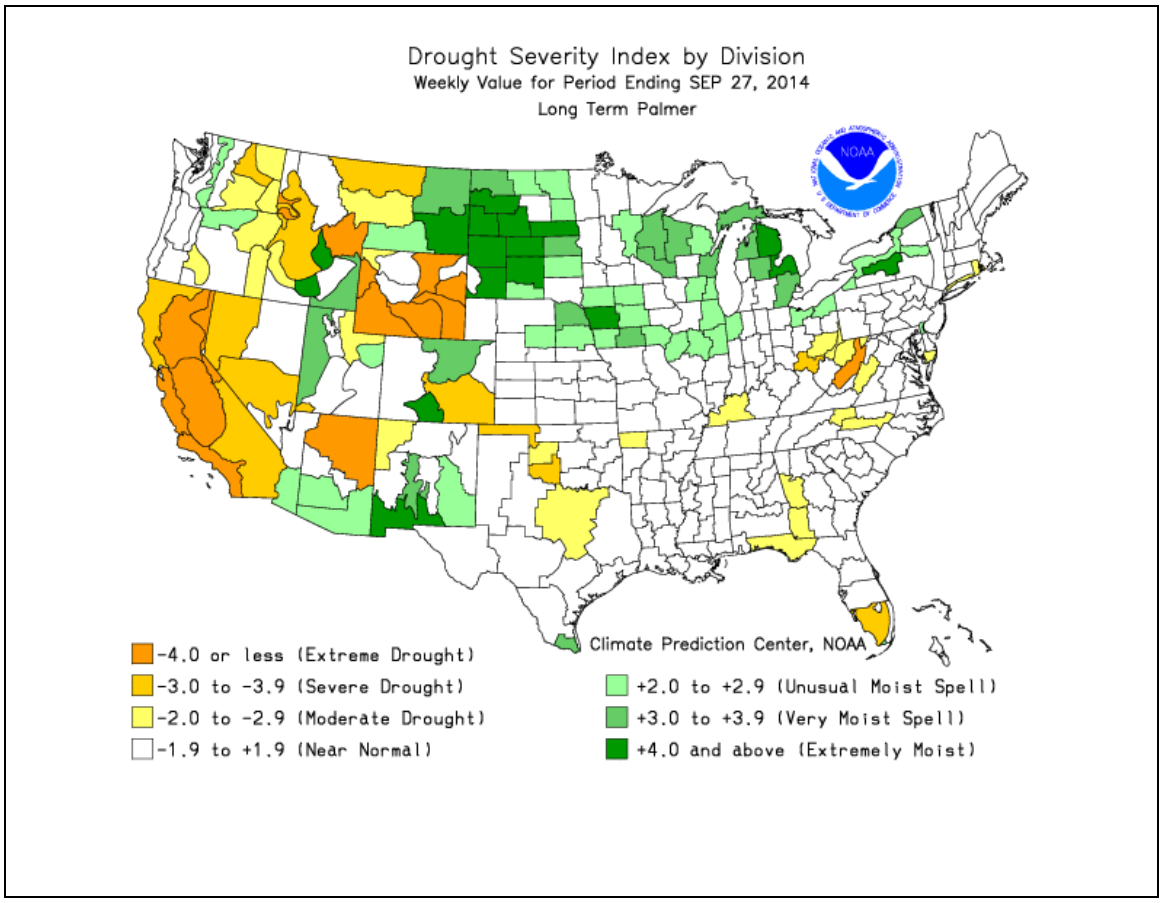

Figure 2.9 Palmer Drought Severity Index (September 2014) measuring long term meteorological conditions over many months.

3. Weather in review: October 2013 – September 2014

October 2013. Thunderstorms associated with the Southwest Monsoon during September, brought significant rain to southeast Idaho, a number of the storms even produced flash flooding. The above normal rainfall helped bring an end to the 2013 fire season. A much drier October followed. A low pressure disturbance on October 3rd and 4th crossed southeast Idaho however, most of the precipitation fell in Montana and Wyoming, leaving only a few hundredths of an inch over southeast Idaho. A second disturbance from October 13th to the 15th entered the Washington coast and dropped quickly towards Nevada. Precipitation up to a quarter of an inch developed over the South Central and Caribou Highlands. A ridge of high pressure near the coast for much of the second half of October resulted in colder than normal temperatures and little or no precipitation. Cold air form near the Canadian Northwest Territories served to develop a low pressure system that moved south through Oregon and then across southern Idaho on October 28th and 9th. The overland trajectory of this disturbance resulted in very little precipitation for Idaho.

November 2013. High pressure in the Eastern Pacific and northwesterly flow over the Pacific Northwest resulted in the few storm systems that did develop, tracking along the Continental Divide. Very little precipitation extended westward into southeastern Idaho. Disturbances on November 3rd to the 8th and another on the 20th and 21st were able to tap more moisture from off shore. However, precipitation for the month of November across southeast Idaho was less than half of normal.

December 2013. Strong high pressure along the Pacific Northwest Coast resulted in very little change through the entire month of December. A disturbance on December 2nd and 3rd moved south from Canada into Idaho, but precipitation was generally limited to a trace to .10 inch across the area. A similar disturbance occurred on December 21st to 23rd. The bottom line as reported by the Natural Resource Conservation Service (NRCS) in their January 1, 2014 Water Supply Outlook Report for Idaho, is near record low precipitation at 18 central and southern Idaho reporting sites. Snow packs were less than 50 percent of normal in Camas Creek Basin, Big Wood above Magic Reservoir, the Little Wood and Oakley basins.

January 2014. Between January 8th and 14th westerly winds off the Pacific Ocean broke through the high pressure ridge that had been so persistent and strong near the Washington and Oregon Coast. Precipitation spread across southeast Idaho but was not particularly heavy and it was certainly not enough to overcome current deficits. The NRCS reported 30 stations now reporting near record low precipitation for the water year beginning October 1st. The best snow packs were running 85 to 95 percent of normal between the Henrys Fork and Headwaters of the Snake River where minor disturbances brushed along the divide with light snow. The National Weather Service at Pocatello

Regional Airport reported 0.14 inches precipitation on January 8-9th and 0.30 inches on the 12th of the month. Otherwise, January proved to be another very dry month.

February and March 2014. February began with cold arctic air from northern Canada making it across the Continental Divide to eastern Idaho on the 5th through 7th of the month, dropping day time high temperatures to the teens and single digits. The cold air contained little moisture and produce very light snow amounts. This was a short lived event and the beginning of a pattern change where westerly winds off the Pacific would dominate the weather pattern for most of February and March. This change brought above normal precipitation across southeast Idaho for both months. The Little Wood and Oakley Basins faired the least under this predominately westerly flow. Most other areas exceeded 100 percent of normal snow packs, and the Head waters of the Snake near 150 percent of normal. The National Weather Service in Pocatello measured 2.29 inches of precipitation for the month of March, making this the 5th wettest March on record. On the down side of this, marine influence began to bring temperatures and snow levels up to around 6000 feet elevations and the middle slopes would show limited snow packs to sustain run off and perhaps delay the start of fire season.

April 2014. A ridge of high pressure redeveloped in the eastern Pacific, helping to shift the storm track further north over the Idaho Pan Handle and the headwaters of the Snake River on the Wyoming side. For the first three weeks of April, most of southeast Idaho remained dry while above normal temperatures proceeded to melt middle and lower elevation snow packs. One more surge of moist westerly winds brought widespread precipitation to the area the last week of April. The mountains faired the best while the lower valleys were 50-70 percent of normal precipitation for the month.

May and June 2014. This was a transition period with the onshore flow in the Pacific Northwest often splitting. Disturbances often tracked either to the north of or well to the south of this area. Temperatures through this time remained near normal. Precipitation however was well below normal for both months. For the month of May, most of the precipitation resulted from two low pressure disturbances crossing Nevada and Utah between May 7th and 12th. For the month of June, an organized low pressure system crossed central Idaho between the 16th and 18th. Numerous showers produced precipitation of .25 to .50 inch in the central mountains, upper and lower Snake Plain, and the eastern highlands.

July 1-29, 2014. The first trickle of moisture and isolated thunderstorms associated with the Southwest Area Monsoon reached southeast Idaho July 4th and 5th, followed by a much stronger surge July 10th through the 12th. The monsoon contribution to weather in southeast Idaho was temporarily cut off by west winds off the northeastern Pacific Ocean the middle of July. Westerly winds brought minor disturbances through Idaho on July

13th -14th, and the 18th; followed by a strong disturbance the 21st through the 25th of the month.

July 28 – August 25, 2014. The Southwest Monsoon brought significant surges of deep moisture into southeastern Idaho on July 28-30th, August 3-8th, August 12-14th, and August 19-25th. These events were often associated with a low pressure disturbance near the Washington and Oregon coasts. The very active tropical cyclone season occurring off Central America and Baja California were also a factor this season. Although it would be difficult to quantify the effect, there were multiple days when satellite imagery showed deep tropical moisture contributing to the pooling of moisture over Mexico and the Desert Southwest. The National Weather Service Office in Pocatello measured 2.18 inches of precipitation for the month of August, or 1.57 inches of precipitation above normal. This was the second wettest August on record for the Pocatello Regional Airport.

August 26 – September 30, 2014. The monsoon was interrupted once more by a disturbance crossing Washington and Idaho August 29th to September 3rd. The monsoon brought one more round of thunderstorms, mainly limited to the Caribou Forest and Bear Lake area September 6-11th. A "season ending event" may have occurred September 26th through September 30th, when a strong low pressure system crossed northern California, Idaho and Wyoming. This system brought widespread rain to all of southeastern Idaho and lowered daytime high temperatures to the low to middle 60F range. The National Weather Service Office located at the Pocatello Regional Airport reported 1.48 inches of rain for the month; this was the 11th wettest September on record. Some reported rain fall amounts follow below.

Observed total rain fall for the 5 day period September 26-30, 2014

Reporting Site	Five Day precipitation total
	Inches
Pocatello, Idaho	1.12
Idaho Falls, Idaho	2.38
Challis, Idaho	0.95
Stanley, Idaho	1.12
Rexburg, Idaho	2.19
Salmon, Idaho	0.97*

*Measured rain fall for Salmon, Idaho on 9/27/14 was missing in the RCC data base.

Source: Applied Climate Information System (ACIS), NOAA Regional Climate Center (RCC) data base.

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4. Precipitation and Dry 1000 hour fuels by zone:

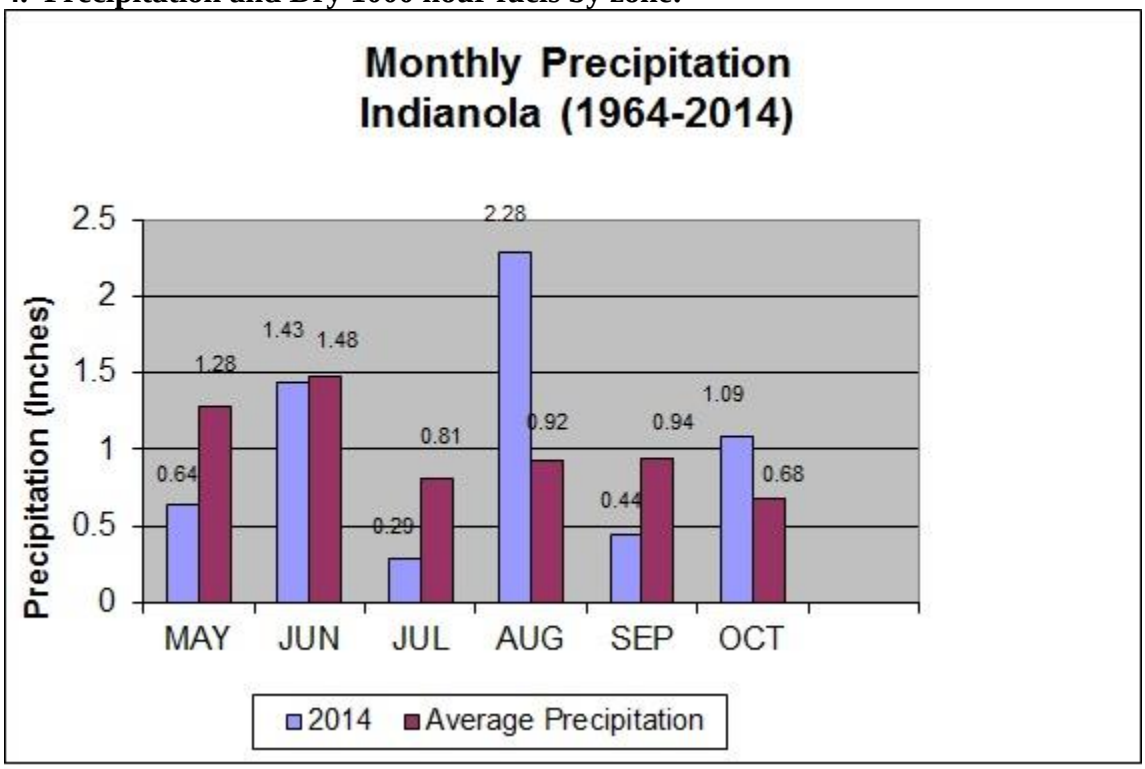

Figure 4.1(a) Observed and average precipitation at Indianola RAWS site, Fire Weather Zone 475.

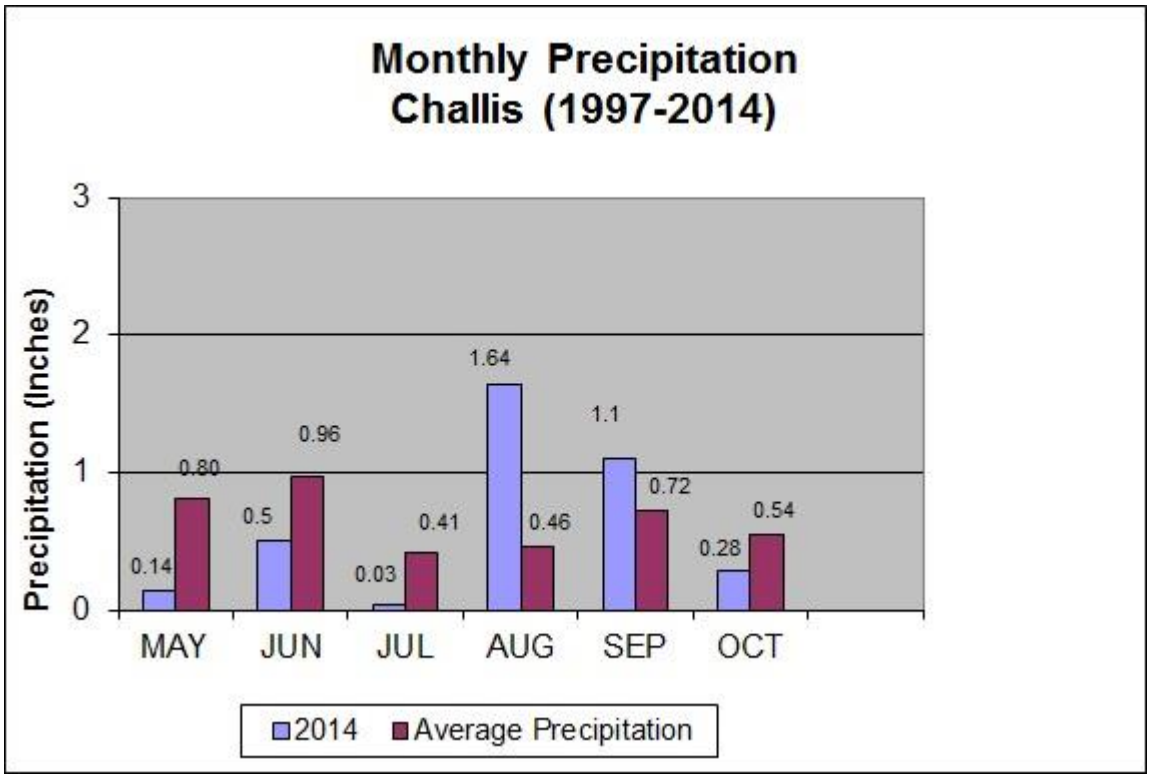

Figure 4.1(b) Observed and average precipitation at Challis RAWS site, Fire Weather Zone 476.

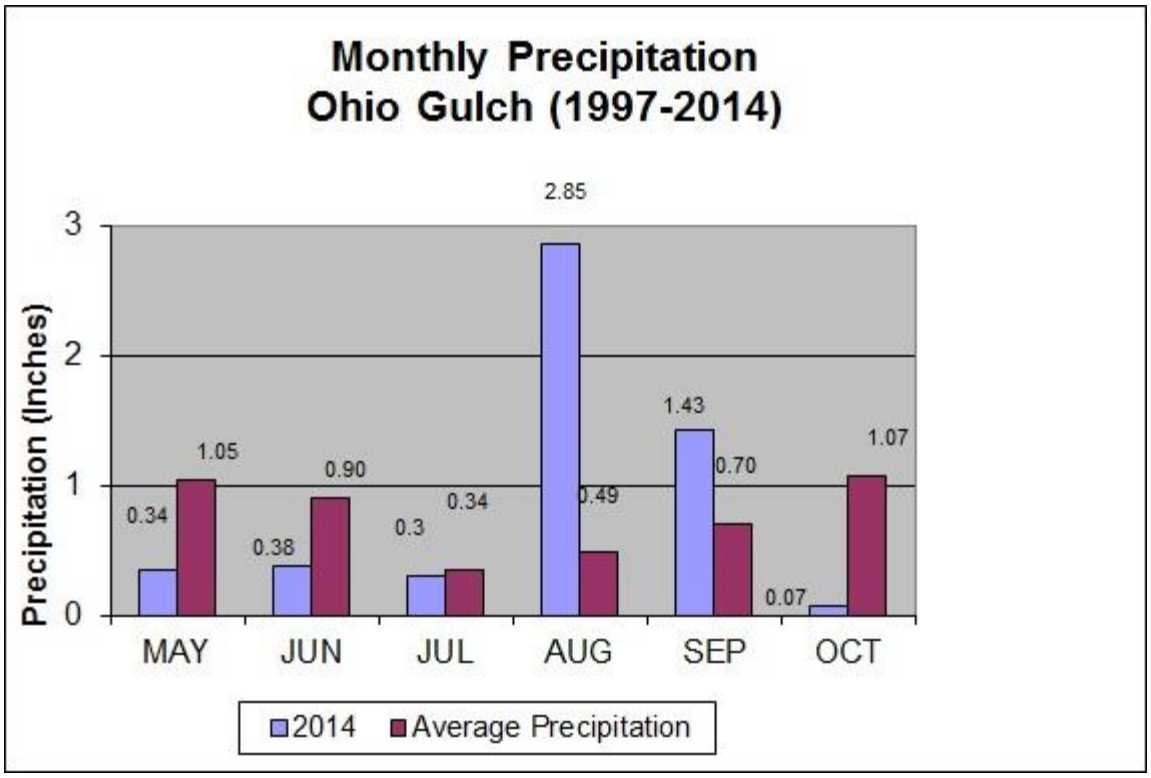

Figure 4.1(c) Observed and average precipitation at Ohio Gulch RAWS site, Fire Weather Zone 422.

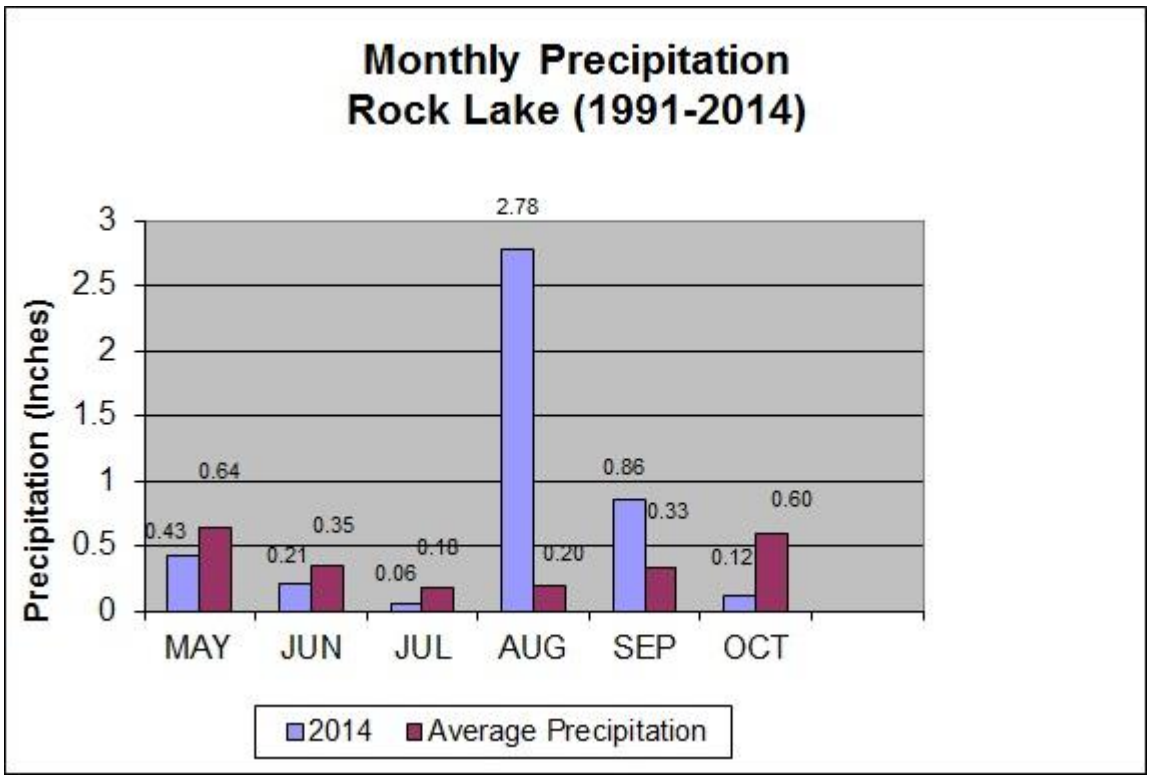

Figure 4.1(d) Observed and average precipitation at Rock Lake RAWS site, Fire Weather Zone 425.

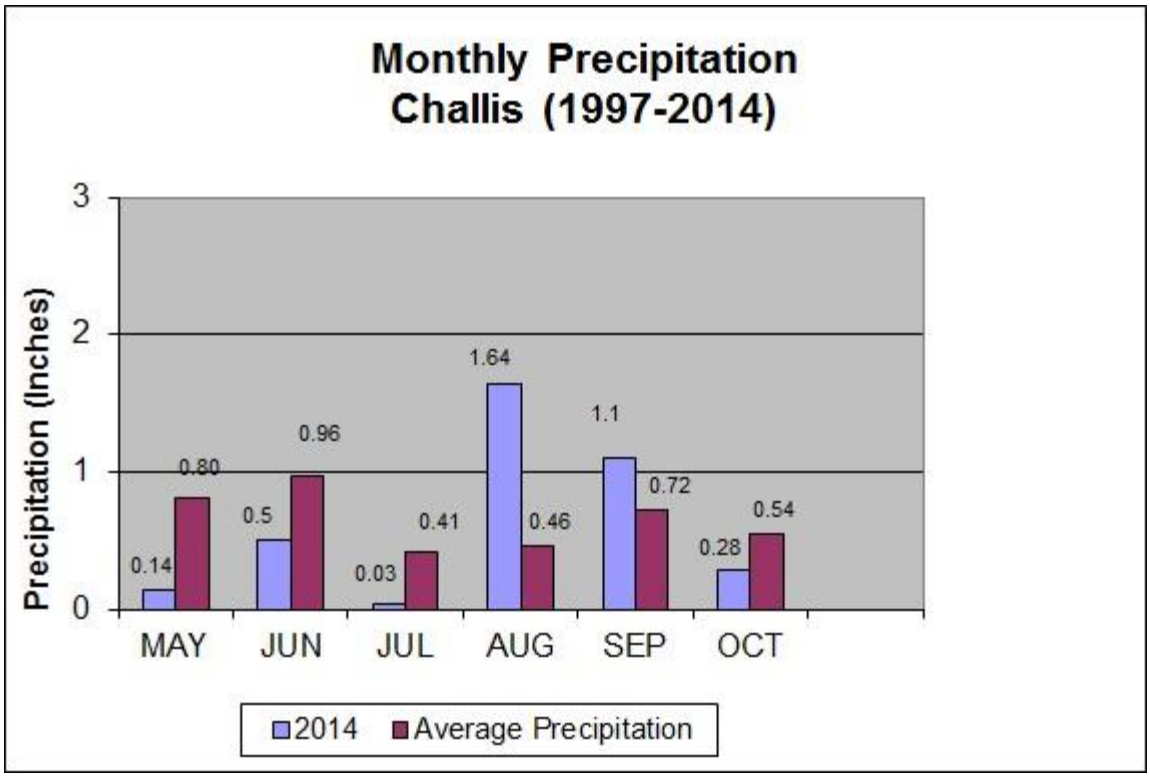

Figure 4.1(e) Observed and average precipitation at Crystal RAWS site, Fire Weather Zone 410.

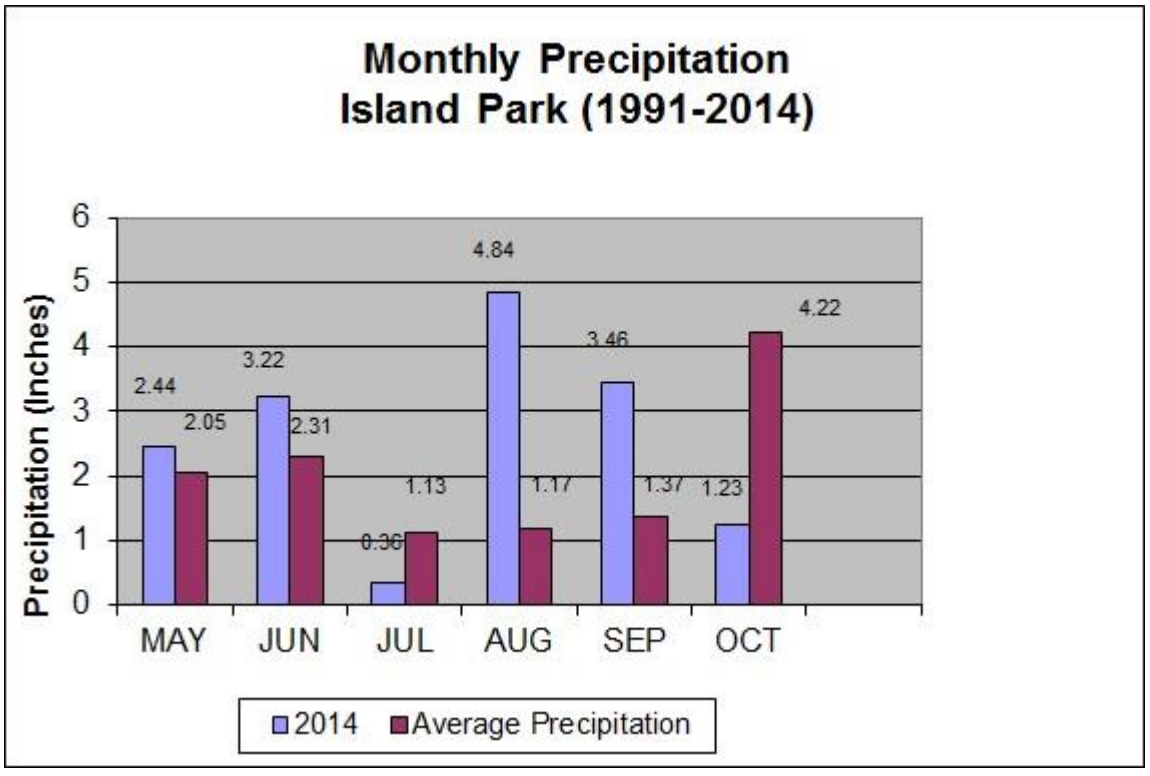

Figure 4.1(f) Observed and average precipitation at Island Park RAWS site, Fire Weather Zone 411.

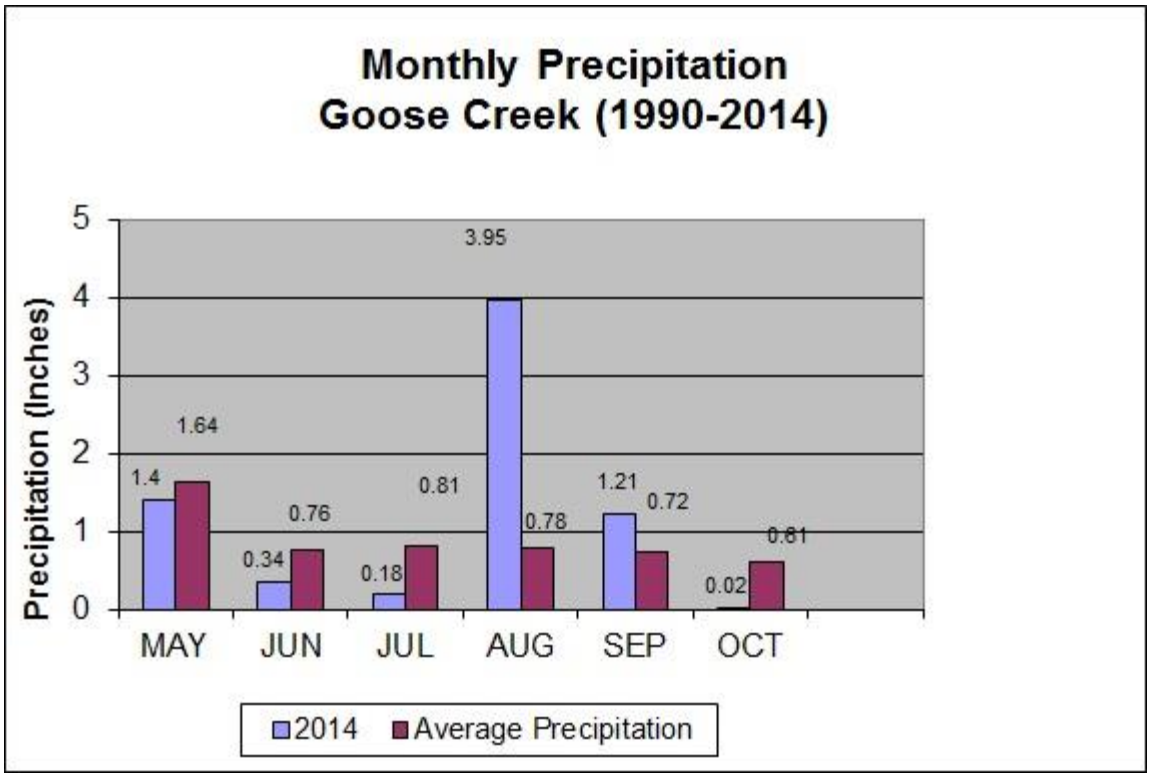

Figure 4.1(g) Observed and average precipitation at Goose Creek RAWS site, Fire Weather Zone 427.

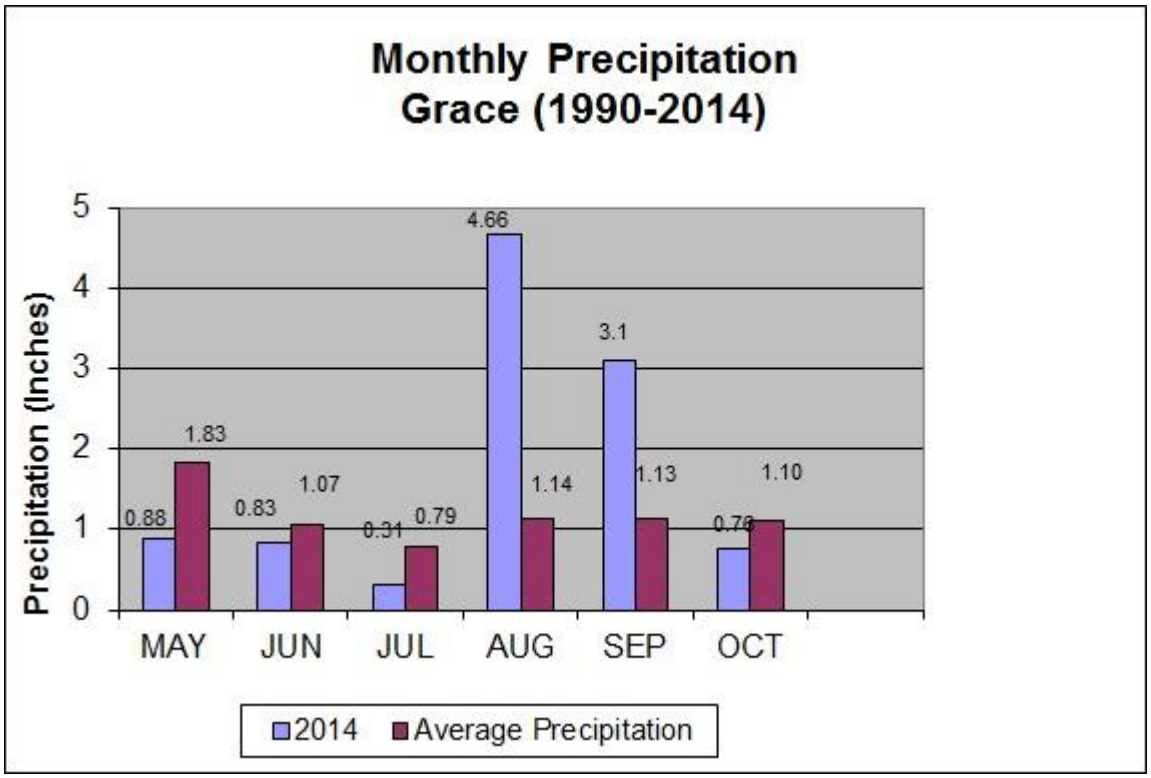

Figure 4.1(h) Observed and average precipitation at Grace RAWS site, Fire Weather Zone 413.

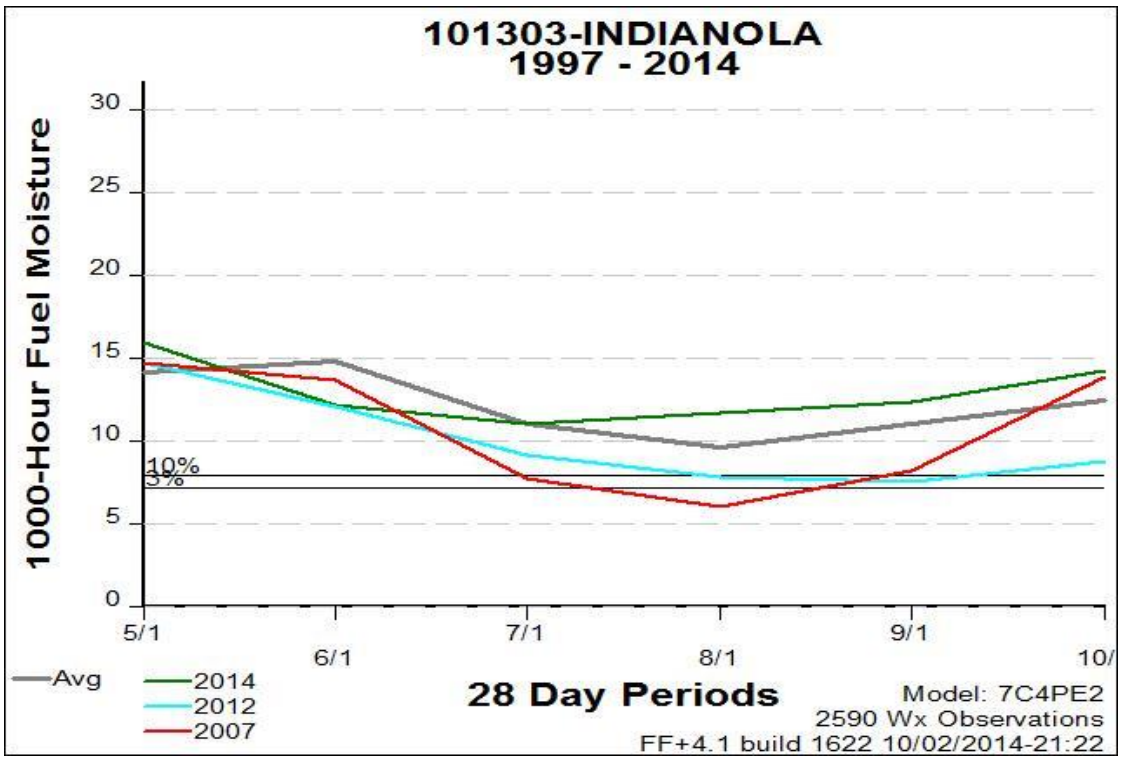

Figure 4.2(a) Observed and average 1000 Hour Fuel Moisture at Indianola RAWS site, Fire Weather Zone 475.

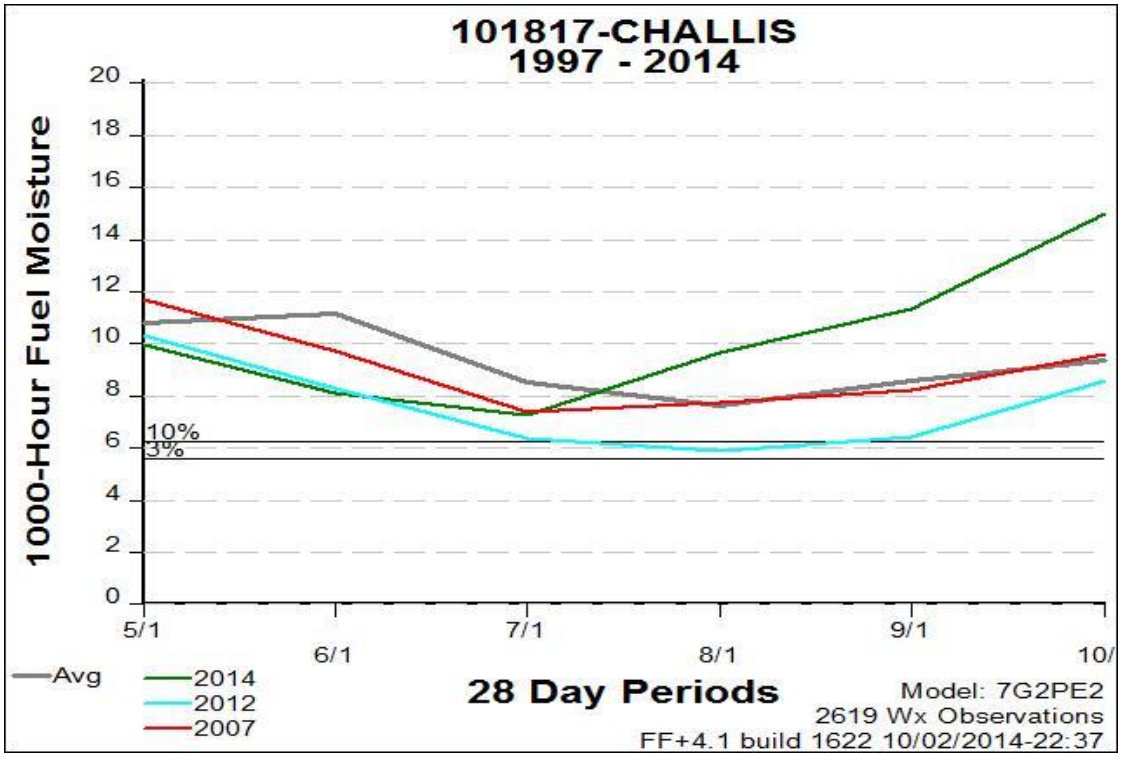

Figure 4.2(b) Observed and average 1000 Fuel Moisture at Challis RAWS site, Fire Weather Zone 476.

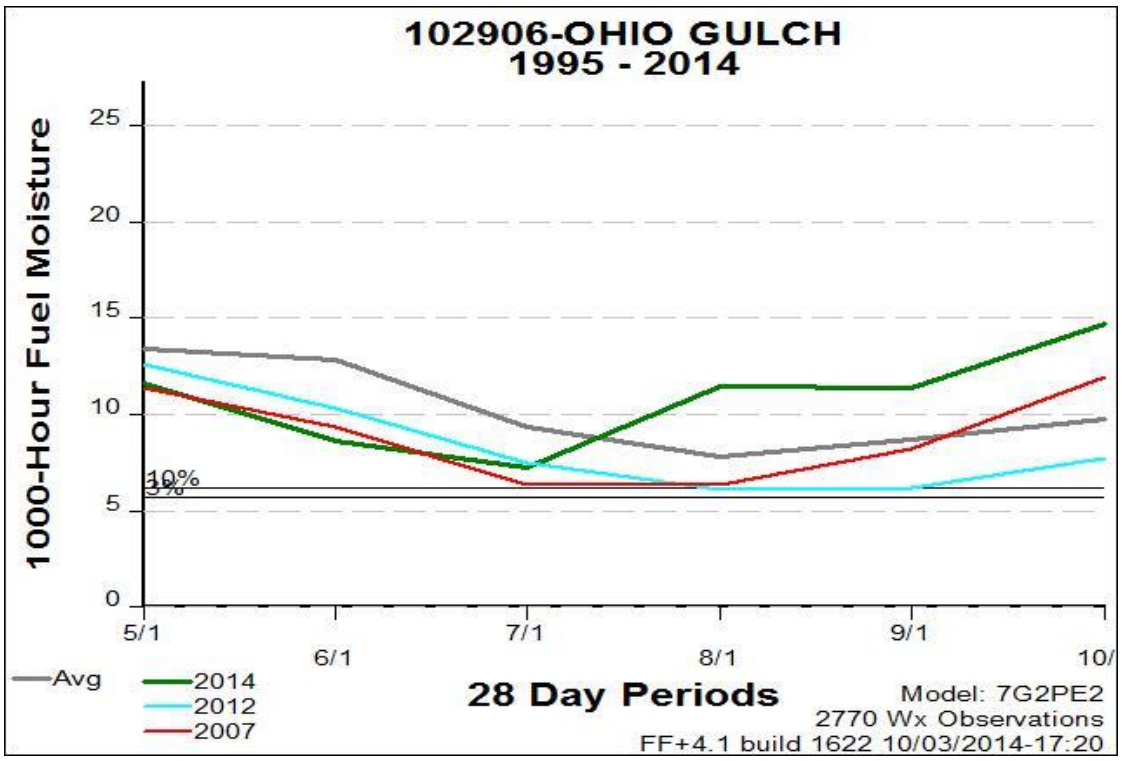

Figure 4.2(c) Observed and average 1000 Fuel Moisture at Ohio Gulch RAWS site, Fire Weather Zone 422.

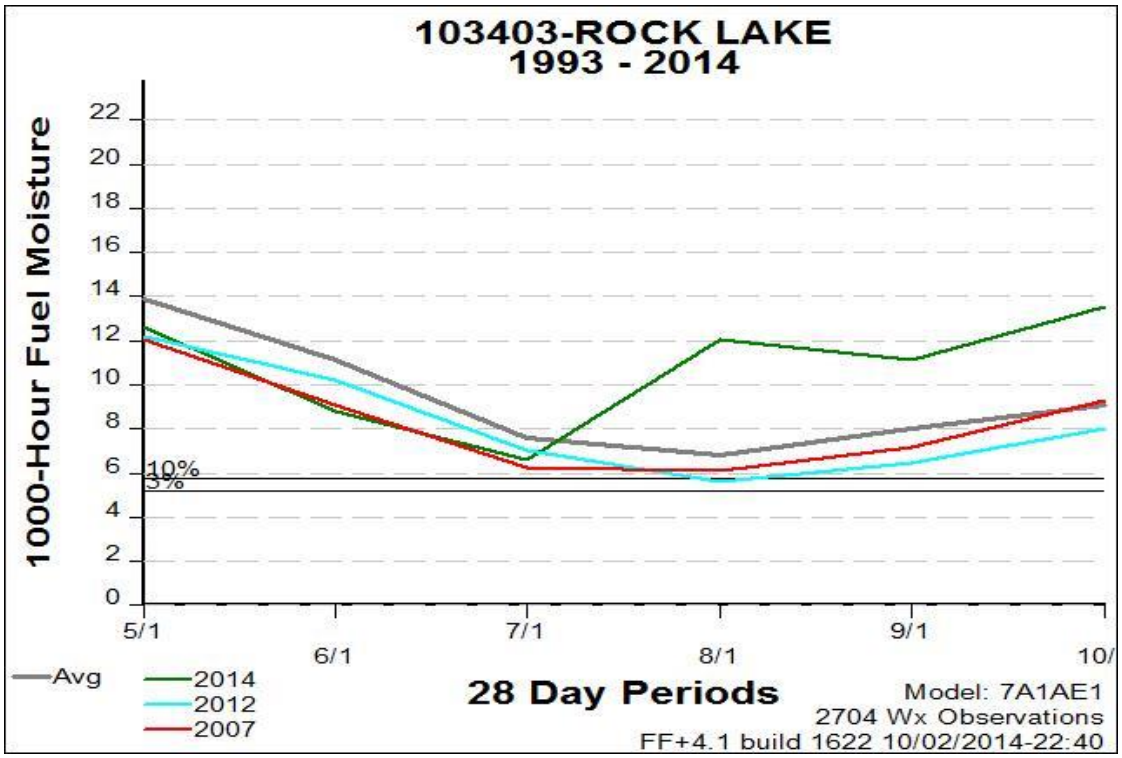

Figure 4.2(d) Observed and average 1000 Hour Fuel Moisture at Rock Lake RAWS site, Fire Weather Zone 425.

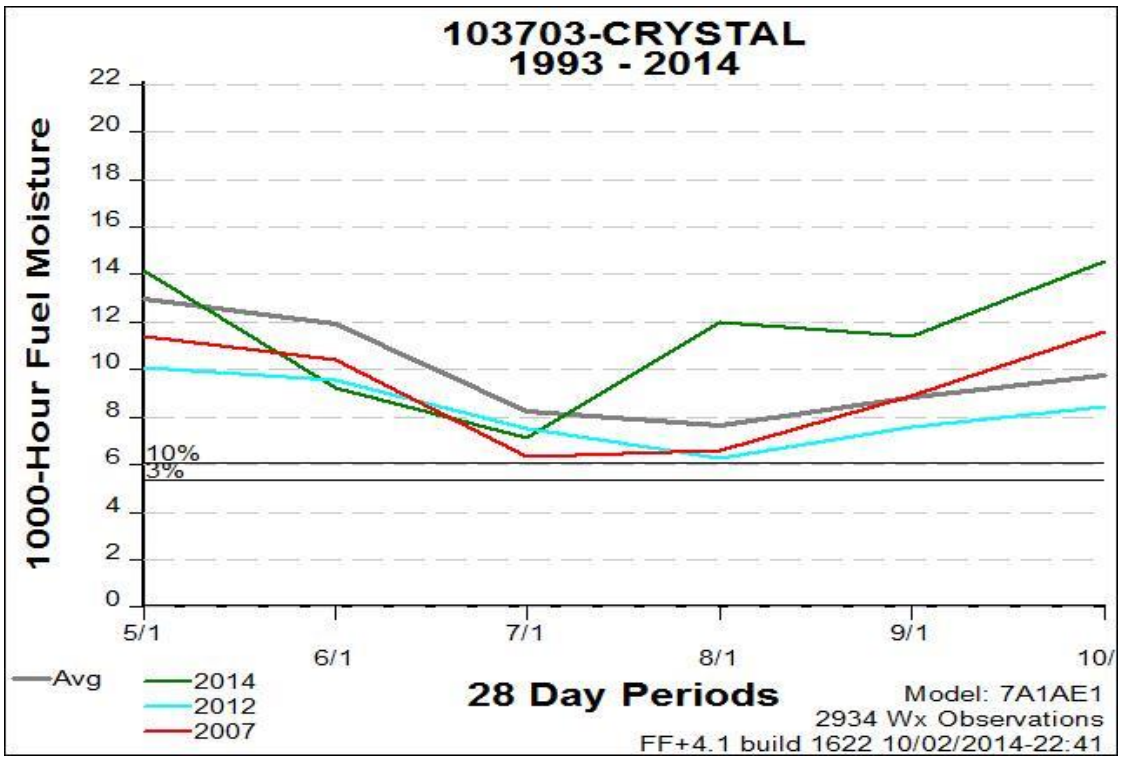

Figure 4.2(e) Observed and average 1000 Hour Fuel Moisture at Crystal RAWS site, Fire Weather Zone 410.

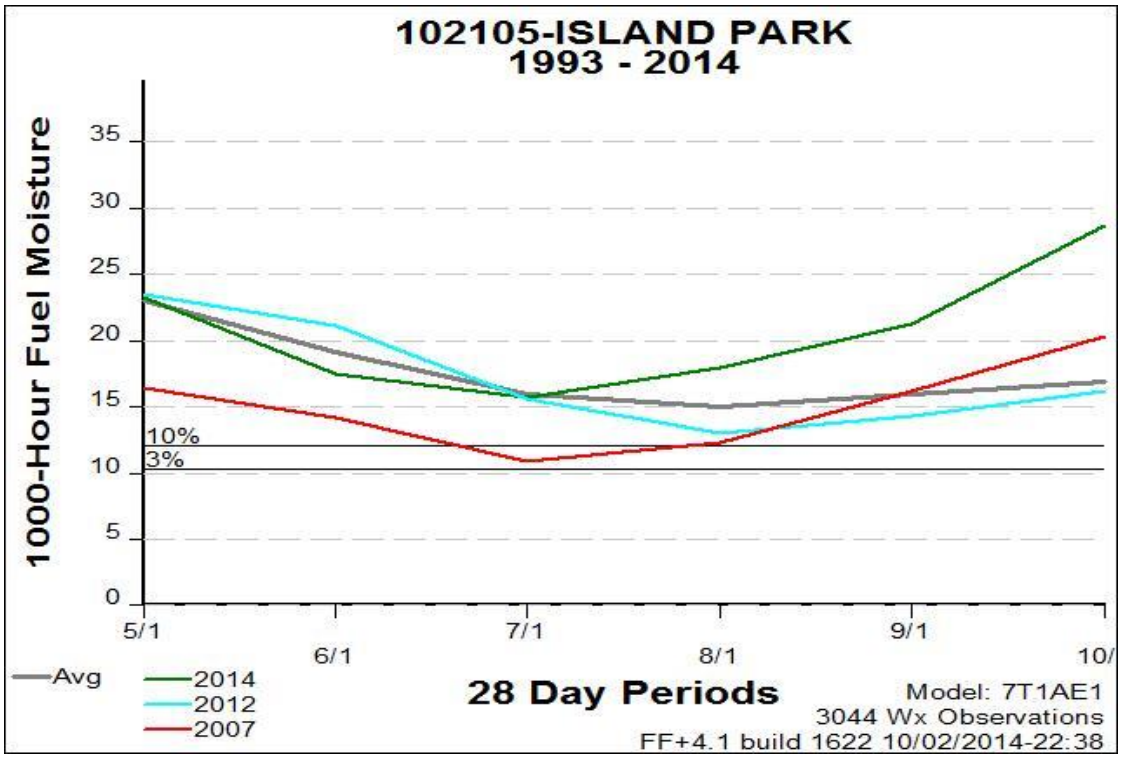

Figure 4.2(f) Observed and average 1000 Hour Fuel Moisture at Island Park RAWS site, Fire Weather Zone 411.

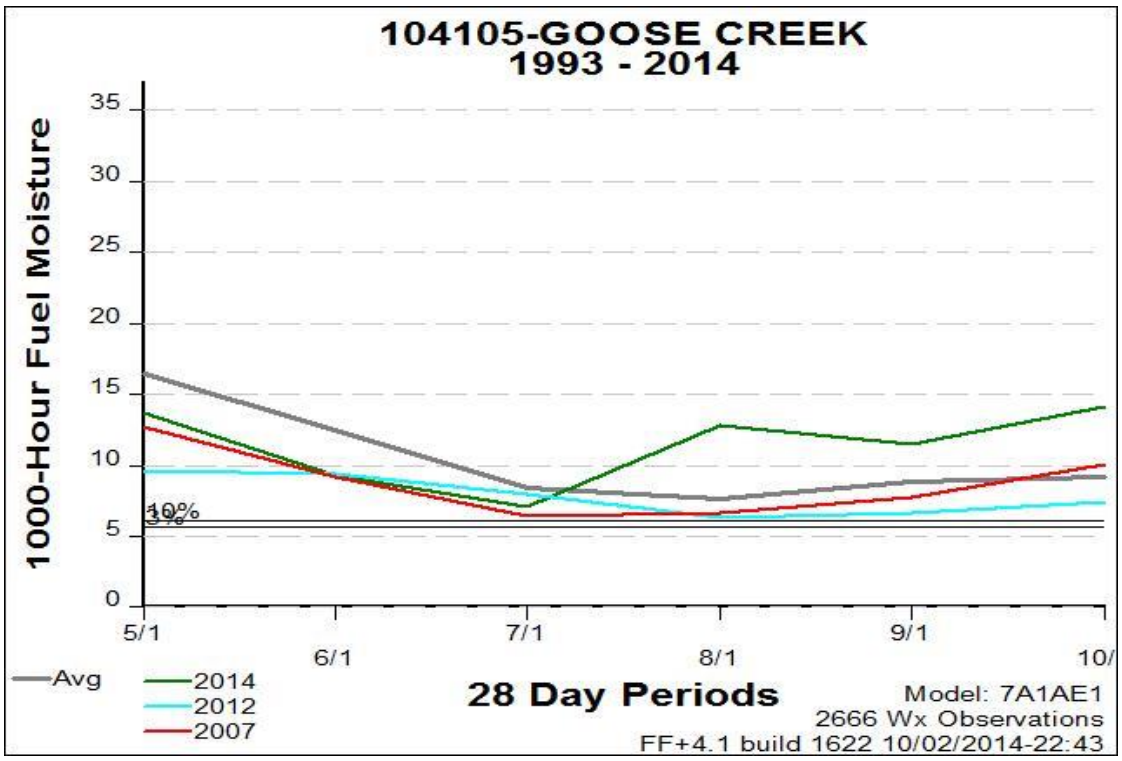

Figure 4.2(g) Observed and average 1000 Hour Fuel Moisture at Goose Creek RAWS site, Fire Weather Zone 427.

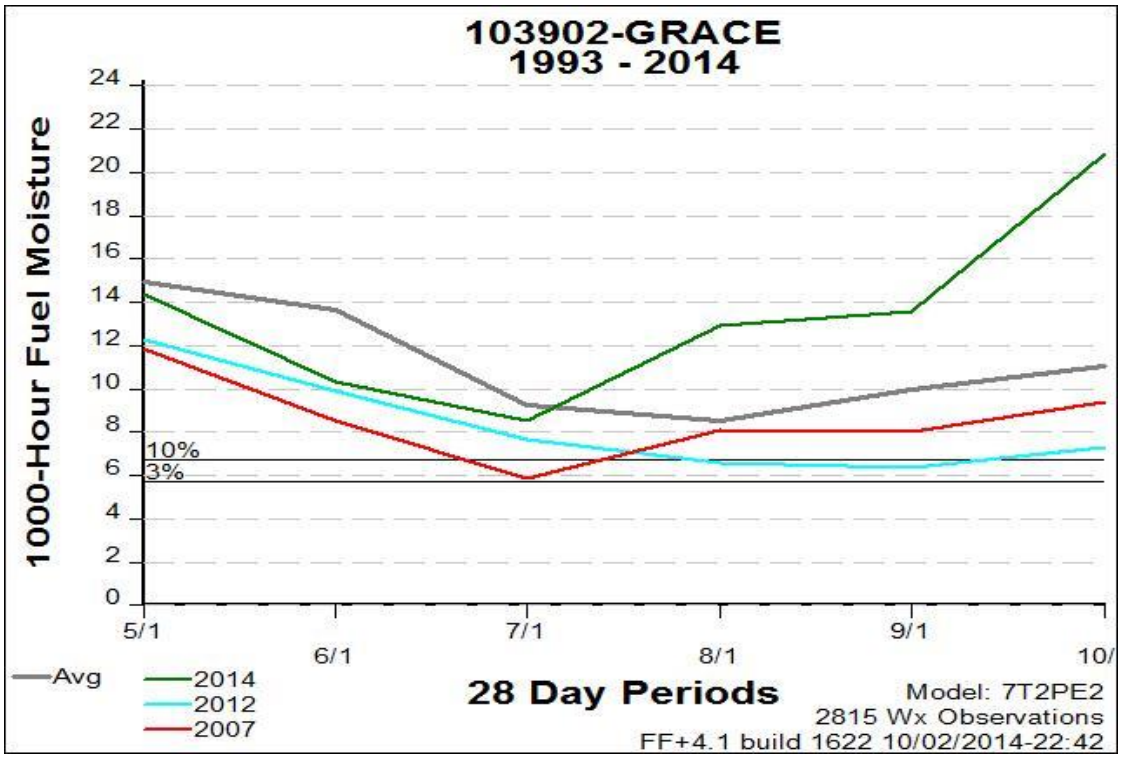

Figure 4.2(h) Observed and average 1000 Hour Fuel Moisture at Grace RAWS site, Fire Weather Zone 413.

5. Office Operations:

5.1 Red Flag Verification

1. Formal verification of Red Flag Warnings in Southeast Idaho began with the 2000 fire season and is now a permanent part of the fire weather program. Verification is based on current Red Flag Warning and Fire Weather Watch criteria that has been coordinated with local land management agencies and published in the Great Basin Annual Operating Plan for Fire Weather and Predictive Services. Current criteria for the Pocatello Fire Weather District are shown in paragraph 5.1.2 below.

Events considered "short fused" or having time lengths typically less than six to twelve hours (Lightning) were split out from other events occurring over a longer time period, reference tables 5.1 (a-d) below.

2. Conditions that indicate a Red Flag Event:

Fire Weather Watches and Red Flag Warnings, are issued for conditions of very high or extreme fire danger (as determined by land management agencies) and dry fuels, in combination with one of the following:

a. Widely scattered or greater ($\geq$ 25% of aerial coverage) thunderstorm activity. NOTE: Beginning with the 2014 fire season, the aerial coverage requirement for thunderstorms was increased from 15 to 25 percent.

b. Winds gusts for any three or more hours $\geq$ 25 mph for Southeast Idaho Mountains, $\geq$ 30 mph for the Snake River Plain and relative humidity is $\leq$ 15 percent.

c. In the judgment of the forecaster, weather conditions will create a critical fire control situation. These conditions may include strong microburst winds, passage of a cold front or a strong wind shift.

Red Flag criteria are developed from a local knowledge of fuel types, terrain, weather conditions that are common or unusual to the area, historical fire behavior, and judgment of the local land management agencies. Because the criteria for issuing Red Flag products can vary from one district to another, these verification results are not necessarily comparable with other forecast offices.

3. Methodology:

Verification of Red Flag Warnings was conducted on a zone by zone basis. Example: If a warning for strong wind was issued for fire weather zones 425 and 410, but strong winds were observed only in zone 410, then this counts as two warnings, one that verified and one false alarm. Also, if strong winds were observed in zone 427, but no warning was issued, then this would be counted as one missed event.

Sources of verification included Remote Automated Weather Stations (RAWS), Meteorological Reporting Stations (METAR), lightning data; WSR-88D Doppler Weather Radar estimated precipitation, volunteer weather spotter information such as heavy rain events, and reports of observed fire behavior from personnel in the field.

Local MESONET reporting networks maintained by Idaho Department of Transportation and the Idaho National Laboratory were not used as a source of verification for wind events since there are differences in observing standards at these sites.

Statistical parameters were calculated as follows:

Probability of Detection	POD = a/(a+c)
Critical Success Index	CSI = a/(a+b+c)
False Alarm Rate	FAR = 1-[a/(a+b)]

where

a = the number of correct warnings (verified)
b = the number of incorrect warnings (not verified)
c = the number of events not warned

4. Sources of error:

Red Flag criteria for wind events in the Great Basin were modified based on interagency agreement set forth in the Great Basin Fire Weather Operating Plan for 2005 and continued without change until present. Beginning with the 2008 fire season, the distinction between wet and dry thunderstorms was eliminated from the Red Flag criteria owing to concerns of lightning strikes and fire ignition occurring outside the main thunderstorm rain shaft. A thunderstorm was previously considered "dry" if it produced little or no precipitation (< 0.10 inch). The mid-point of a forecast range serves as the break point for watch/warning issuance. This effectively adds an element of representativeness to the verification process. Therefore, any inference of trends from verification results must consider changes made to the established criteria for a Red Flag Event and verification procedures in past years. The Red Flag Event criteria and verification procedures also changed in 2002 and 2004 and 2014. Please reference past issues of this Fire Weather Annual Report.

Forecaster skill level and confidence may be lower for peak wind gusts over sustained wind speed. Downward transport of momentum in the atmosphere, complex terrain, inversions of temperature lapse rate, variations in surface insolation owing to vegetative ground cover, reflectivity, absorption and transmissivity of the atmosphere, and the energy phase change of water in the atmosphere all impact the observed peak surface wind gust. Not all of these processes are sufficiently represented by available computer modeling and operational forecaster techniques.

Personal judgment was required to determine when lightning was more than a widely scattered event and significant in areal coverage.

Field observations of fire behavior may serve as an important indicator of Red Flag conditions. On rare occasion this may affect the best judgment of the forecaster and land management personnel. On days or in locations where there were no on-going fires this information was not available.

In paragraph 2c above, judgment of the forecaster and land management personnel is permitted to override the strict criteria of relative humidity and wind gusts. The general consensus is there is enough uncertainty in the fire environment (fuel, weather and topography) and this should remain a necessary and important element of the Red Flag criteria. This also requires a certain amount of judgment in the verification process.

Both RAWS and METAR stations report instantaneous wind gusts, but the observing standards for height of the wind sensor can vary.

On rare occasion the fuels were defined as critical at an elevation below that of existing RAWS and METAR stations.

Skill and lead-time vary with the type of event.

5. Decision Criteria

Wind – The number of available RAWS and METAR sites varied both with the area warned and location where fuels were defined as critical. Every attempt was made to judge the representativeness of wind conditions.

Lightning – Archived lightning data was used to determine verification. A good deal of judgment was needed to determine if the observed lightning was more than an isolated event. Some thunderstorms are more efficient lightning producers than others.

Wet versus dry thunderstorms – this element was removed from the Red Flag Criteria beginning with the 2008 fire season. The number of reported fire starts is not a reliable indicator since lightning strikes can occur outside the thunderstorm precipitation shield striking drier fuels and a single thunderstorm can be long lived producing numerous strikes over some distance.

Other – Reports of observed fire behavior from personnel in the field continue to be useful when dealing with long-term drought conditions and days of reported low relative humidity. If sustained fire runs are observed but available observations do not necessarily support warning criteria, the judgment would likely fall on the side of safety of life and property.

6. Results:

Red Flag Warning criteria were met on a total of 8 different days during this fire season in the Pocatello Fire Weather District. Strong gusty winds and low relative humidity were a factor on 4 of these days; thunderstorms and lightning activity were a significant factor on 4 of these days. There were 2 events (zones) occurring on 2 different days when Red Flag Warning criteria were met without a warning in effect.

	May	June	July	August	September	October	Total
Total # watches	0	0	8	0	0	0	8
Total # of warnings	0	0	20	0	0	0	20
Number warnings that were preceded by a watch	0	0	8	0	0	0	8
Warnings verified (a)	0	0	15	0	0	0	15
Warnings not verified (b)	0	0	5	0	0	0	5
Events not warned (c)	0	0	2	0	0	0	2

Table 5.1(a). Combined synoptic (long term) and short fused Red Flag event products issued in the WFO Pocatello Fire Weather District during the 2014 season.

	May	June	July	August	September	October	Total
Total # watches	0	0	5	0	0	0	5
Total # of warnings	0	0	12	0	0	0	12
Number warnings preceded by a watch	0	0	5	0	0	0	5
Warnings verified (a)	0	0	10	0	0	0	10
Warnings not verified (b)	0	0	2	0	0	0	2
Events not warned (c)	0	0	1	0	0	0	1

Table 5.1(b). Synoptic scale Red Flag event products issued in the WFO Pocatello Fire Weather District during the 2014 season. Example cold fronts, low relative humidity, strong pressure gradient related winds.

	May	June	July	August	September	October	Total
Total # of watches	0	0	3	0	0	0	3
Total # of warnings	0	0	8	0	0	0	8
Number warnings preceded by a watch	0	0	3	0	0	0	3
Warnings verified (a)	0	0	5	0	0	0	5
Warnings not verified (b)	0	0	3	0	0	0	3
Events not warned (c)	0	0	1	0	0	0	1

Table 5.1(c). Short fused Red Flag event products issued in the WFO Pocatello Fire Weather District during the 2014 season. Example: lightning events and strong micro burst winds.

Red Flag verification resulted in the following:

	Synoptic Events	Short Fused Events (Lightning)	All Events	3 year average
Probability of detection POD	0.91	0.83	0.88	0.90
Critical success index CSI	0.77	0.56	0.68	0.68
False alarm rate FAR	0.17	0.38	0.25	0.26
Average lead time for Watches			38 hrs. 50 min	36 hrs. 21 min
Average lead time for Warnings	12 hrs. 13 min.	11 hrs. 35 min.	12 hrs. 00 min	12 hrs. 29 min

Table 5.1(d). Combined synoptic (long term) and short fused Red Flag event products issued in the WFO Pocatello Fire Weather District during the 2014 season.

7. Implications:

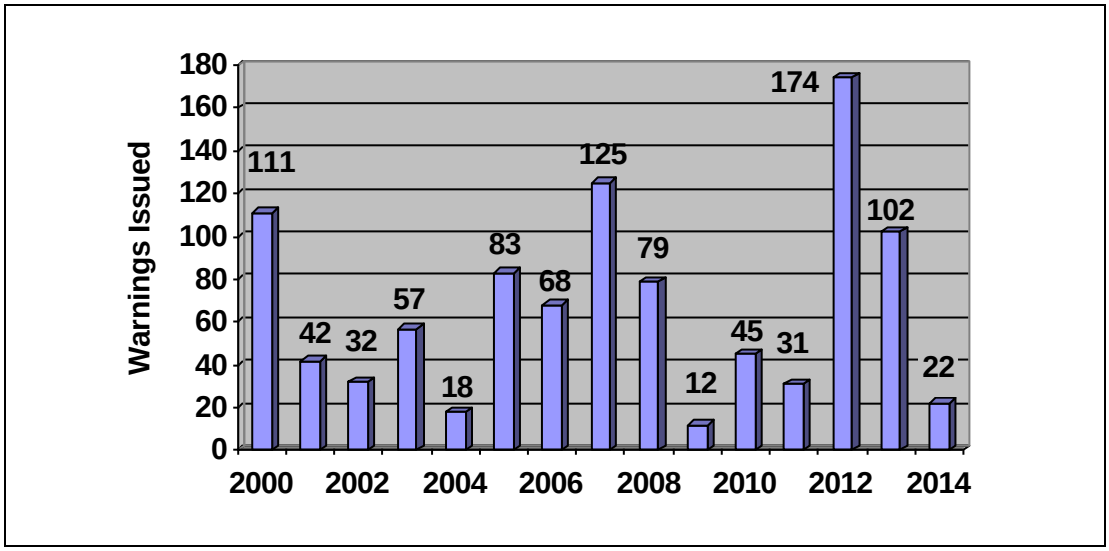

Figure 5.2 Historical Red Flag Warnings in Southeast Idaho; based on one warning per fire weather zone meeting criteria. In dry years the number of zones with "critical" fuels generally increases, and so does the number of warnings. The Red Flag criteria have changed several times since the 2000 fire season and are not necessarily comparable.

The 2014 fire season in Southeast Idaho was the third shortest season with respect to the Red Flag program, since the year 2000 when this office began issuing Fire Weather Forecasts. Substantial rain fell across most of South East Idaho during the month of August. At the Pocatello Regional Airport, precipitation was reported on 18 different days and measured 2.18 inches for the month; the second highest monthly precipitation for August on record. The record is 3.98 inches set in 1968. Significant widespread rainfall was also reported the last week of September. The abundance of precipitation and higher relative humidity served to mitigate any early season drying of fuels.

5.2 Spot Forecasts prepared by WFO Pocatello:

Wildfires	109
Prescribed Fires	153
HAZMAT	0
Backup	0
Exercise	0
Search & Rescue	0
Total	262

Verbal Phone Briefings	
For fire support	68
Search & Rescue	0
Emergency management	03
Exercise	0
Total	71

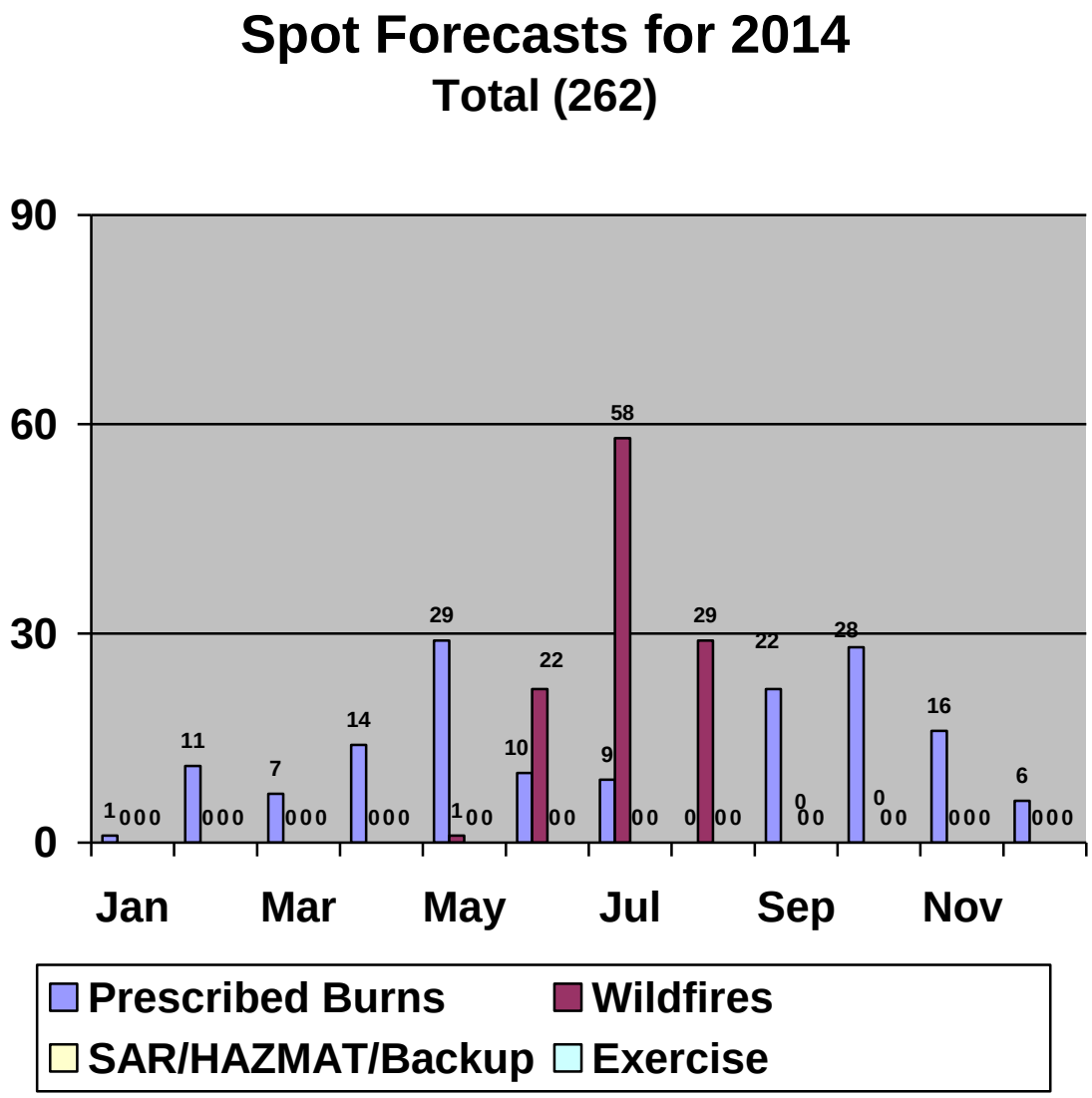

Figure 5.3(a) Spot Forecasts prepared by the Pocatello Fire Weather District during the 2014 fire season.

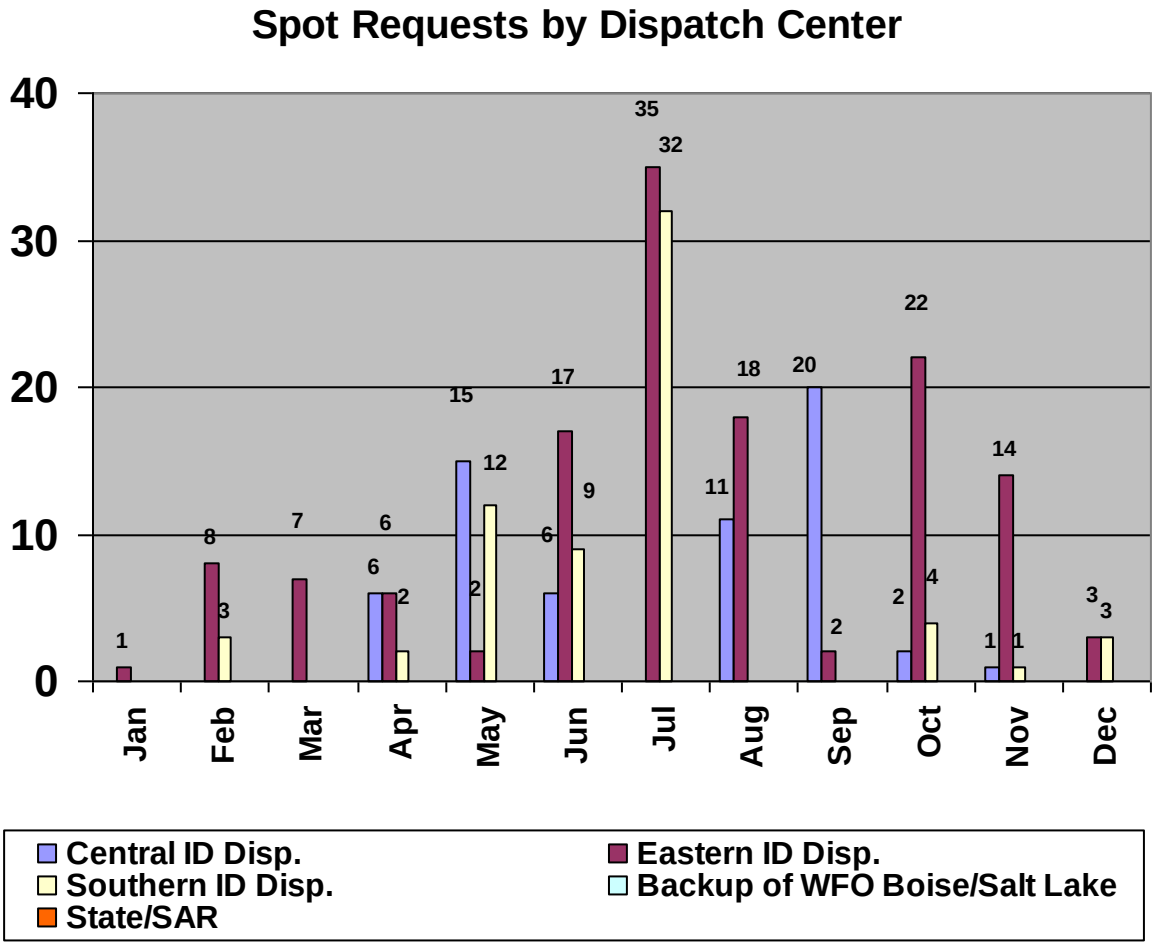

Figure 5.3(b) Spot Forecasts requested by dispatch area during the 2014 fire season in Southeast Idaho.

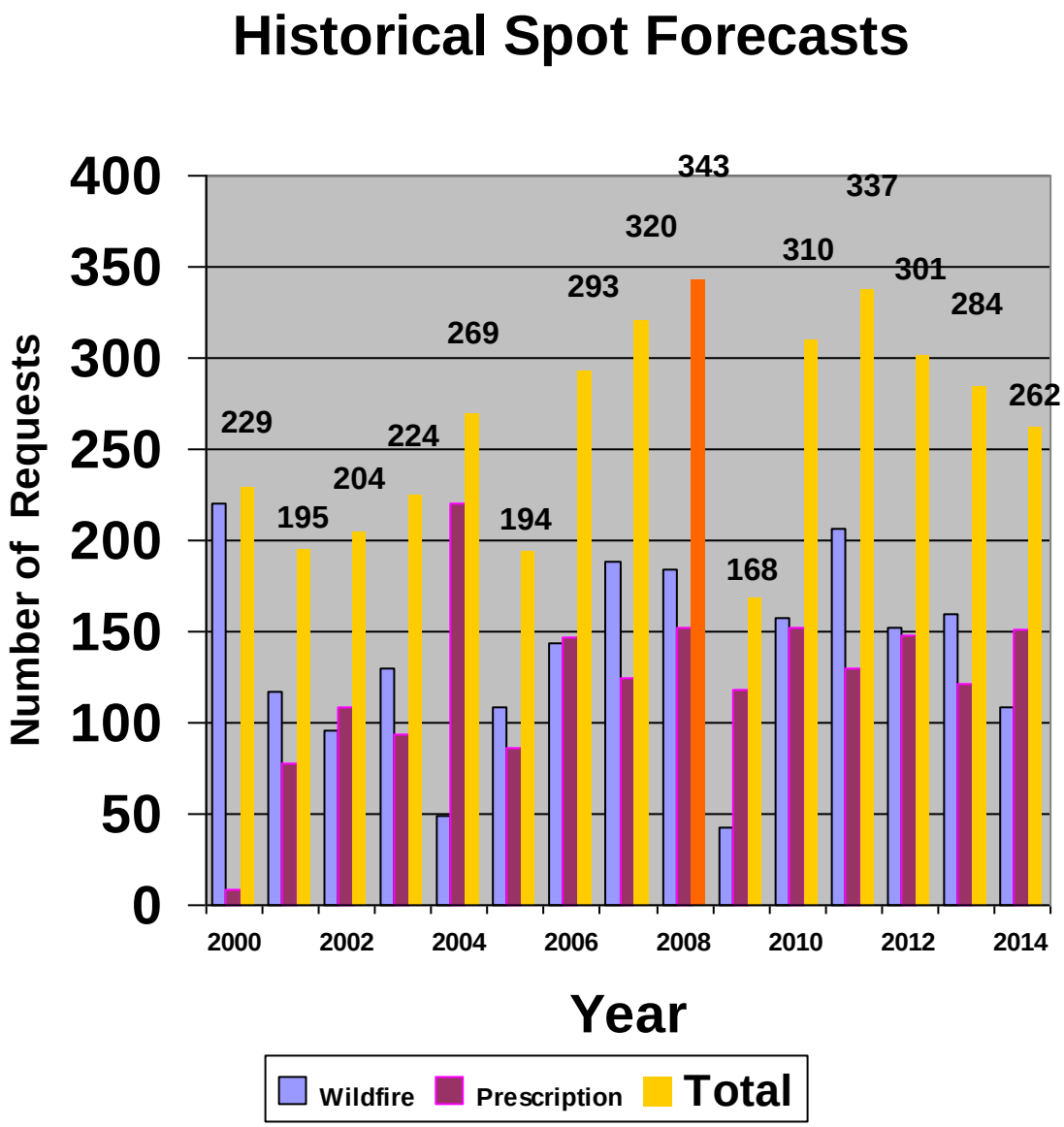

Figure 5.4 Historical trends in Spot Forecast requests for the Pocatello Fire Weather District. There were 262 SPOT forecasts provided in 2014. The record for the National Weather Service Office in Pocatello is 343 SPOT forecasts in 2008.

5.3 Fire Dispatches Supported by WFO Pocatello: There were three Type I IMET dispatches this fire season resulting in 37 man days served out of the office.

Date	*Dispatch Location*	*Type I Incident Meteorologist*
July 16 to July 28, 2014	Whiskey Complex and Mack Fire Boise NF 3SE Garden Valley, Idaho	Bob Survick
August 2 to August 13, 2014	Bald Fire Lassen NF near Fall River Mills, California	Jack Messick
September 15 to September 26, 2014	36 Pit Fire Mount Hood NF 10SE Estacada, Oregon	Bob Survick

Table 5.3a Type I Incident Meteorologist Dispatches by WFO Pocatello (in support of onsite IMT operations).

Date	*Dispatch Location*	*Type II Incident Meteorologist*
January 16, 2014	Pacificorp Dam Break Phone Tree Functional exercise	Vern Preston
February 24-25, 2014	Flood Mitigation Blaine County Table top exercise	Vern Preston
March 5, 2014	BAER Team Training Exercise	Vern Preston
March 26, 2014	Dam Break USBOR Little Wood Table Top Exercise	Corey Loveland
April 8, 2014	Ragin Stagin table top exercise Rigby, Idaho	Vern Preston
April 12, 2014	Minidoka Train Accident Functional exercise	Vern Preston
April 23, 2014	Earthquake Health District Table top exercise	Vern Preston
April 30, 2014	America's Preparation National Exercise	Vern Preston
May 5, 2014	NSSL Spring Experiment	Vern Preston

	Functional Exercise	
May 5, 2014	EAS State Functional Exercise (RMT from NWS)	Vern Preston
May 10, 2014	Dubois Emergency Preparedness Fair	Vern Preston
May 13, 2014	Dam Break USBOR Palisades/Ririe table top exercise	Corey Loveland
May 14-15, 2014	Dam Break Magic Simplot functional exercise	Corey Loveland
May 26-27, 2014	Sun Valley SNRA Functional Fire Exercise	Dean Hazen
June 6-7, 2014	Ragin Station Functional Exercise	Vern Preston
June 26-28, 2014	Decision Support Driggs Hunstman Outdoor Festival	Vern Preston
June 28, 2014	Wildland Fire full scale Functional exercise Menan, Idaho	Vern Preston
July 8, 2014	Ragin Stagin Table Top Exercise Post Review	Vern Preston
Jul 9, 2014	Site Visit for Fall River Flood Potential	Corey Loveland
Jul 11, 2014	Flash Flood Event Pocatello	Vern Preston
Jul 12, 2014	USFS EOC Custer Day Celebration Stanley, Idaho	Vern Preston
Jul 15, 2014	Flash Flood Event Rexburg and BYU Idaho Campus	Vern Preston
Jul 21, 2014	Fires in Caribou County	Vern Preston
Jul 29, 2014	ISU Disaster Functional Full Scale Exercise	Vern Preston
Aug 1-2, 2014	Pocatello EOC Airport Skyfest Airshow	Gary Wickland
Aug 2, 2014	Fish Creek Fire	Vern Preston
Aug 5, 2014	Flash Flood Event Pocatello	Vern Preston
Aug 6, 2014	Flash Flood Event Blackfoot	Vern Preston
Aug 7-10, 2014	Shoshone Bannock Tribal EOC	Vern Preston

	Festival	
Aug 17-18, 2014	Bonneville County EOC Cross Country Bike Race	Vern Preston
Aug 18, 2014	Bear River Dams Table Top Exercise	Corey Loveland
Aug 18, 2014	Fires in Madison County	Vern Preston
Aug 19, 2014	Flash Flood Event Idaho Falls	Vern Preston
Aug 19, 2014	Bear River Dams Functional Exercise	Corey Loveland
Aug 20, 2014	Site Survey for Tornado Event Butte and Custer Counties	Vern Preston
Aug 21, 2014	Tornado Event Lincoln and Blaine Counties	Vern Preston
Aug 23, 2014	Fremont County EOC Marathon	Vern Preston
Aug 27, 2014	USBR Jackson Dam Break Functional Exercise	Corey Loveland
August 27 to September 6, 2014	Eastern Idaho State Fair, Blackfoot, Idaho Daily Decision Support Briefings	Various staff
Aug 27-Sep 6, 2014	Eastern Idaho State Fair	Various Staff
Sep 4, 2014	South Central Idaho Emergency Managers Workshop – Flood Review	Corey Loveland

Table 5.3b Type II Incident Meteorologist Dispatches or local support by WFO Pocatello (at an Emergency Operations Center, Area Command, or Joint Field Office location).

5.4 Training: WFO Pocatello staff participated in the following training courses during the 2014 season.

Forecaster	Training situation
Bob Survick	IMET Continuity of Excellence Exercise, Boise Idaho, April 7-11, 2014
Jack Messick	Virtual IMET Workshop, April 14-18, 2014.
Jack Messick	RT-130, BLM Pocatello Field Office, May 27, 2014.
Bob Survick	Pre-Fire Season Station Meeting for all forecasters, National Weather Service Office, Pocatello, Idaho May 27, 2014.
Mike Huston	Instructor S-290 Intermediate Wildland Fire Behavior, June 2-3, 2014, Eastern Idaho Technical College, Idaho Falls, Idaho.
Corey Loveland	BAER Team Training Meeting, April 21, May 2, and May 12th, 2014.

5.5 Field Visits: The staff at WFO Pocatello participated in 46 interagency meetings this year.

Location	Dates
Eastern Great Basin Predictive Services And WFO Pocatello Post season meeting for fuels and Red Flag Changes for 2014 Shelby Law, Rick Dittmann, and various National Weather Service staff members.	November 4, 2013
Sawtooth NF Avalanche Cent. Vern Preston, Travis Wyatt	January 16, 2014
Gate City Interagency Fire Front Meetings, Pocatello, Idaho	Monthly
Local Emergency Planning Committee Hydrology and Fire Weather Outlook Various Counties and dates Vern Preston, Corey Loveland	14 meetings
Ground Hog Day Chili Cook-off Southeastern District Health Office	January 31, 2014

Pocatello, Idaho	
Idaho Emergency Managers Meeting	February 3, 2014
Idaho Emergency Managers Meeting Hydro Table Top Exercise WEBEOC	February 4, 2014
Idaho Emergency Managers Meeting Presentation	February 5, 2014
Portneuf Levee Meeting	February 13, 2014
Tribal Government TERC Meeting	February 19, 2014
Emergency Manager Workshop	March 6, 2014
Idaho Transportation EM meeting	April 2, 2014
BAER Team Meeting Corey Loveland	April 14, 2014
USBOR Flood Preparation Planning Meeting Corey Loveland	April 15, 2014
South Central Idaho Interagency Coop/FMO Meeting Shoshone, Idaho Mike Huston	April 14, 2014
USBOR Hydro Flood Planning Meeting Corey Loveland	May 30, 2014
Spring Operations Meeting Eastern Idaho Interagency Fire Center Idaho Falls, Idaho Mike Huston	May 06, 2014
Decision Support Services Cub Scout Encampment Pocatello, Idaho Vern Preston	June 16 and 21, 2014

South Central Idaho Emergency Manager Workshop
Flood Review — Sep 4, 2014

Post Season Meeting
Eastern Idaho Interagency Fire Center
Idaho Falls, Idaho
Mike Huston — October 27, 2014

Post Season Meeting
South Central Idaho Interagency Dispatch Center
Shoshone, Idaho
Mike Huston — October 29, 2014

Post Season Meeting
Central Idaho Interagency Fire Center
Salmon, Idaho
Mike Huston — December 3, 2014

5.6 Support to IMETs dispatched to the WFO Pocatello area of responsibility:

No Type-I Incident Meteorologists from other Weather Service Offices around the country were dispatched to Southeast Idaho during the 2014 fire season.

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